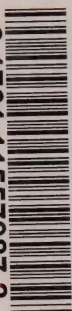



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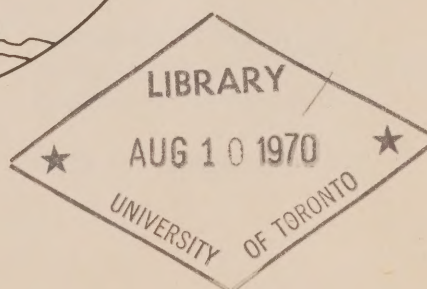
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RESOLUTE

an area economic survey



DON BISSETT

INDUSTRIAL DIVISION

NORTHERN ADMINISTRATION BRANCH

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

Canada

RESOLUTE

an area economic survey

(Vol.II of the Lancaster Sound Survey)

1967

A.E.S.R. 67/1

Don Bissett

The views, conclusions and recommendations expressed herein are those of the author and not necessarily those of the Department of Indian Affairs and Northern Development.

**Industrial Division,
Department of Indian Affairs and
Northern Development.**

Ottawa, November 1968.

PREFACE

This report is one of a series of Area Economic Surveys carried out by the Industrial Division of the Department of Indian Affairs and Northern Development.

These surveys are a continuing part of the Department's efforts to determine the basis for local economic and social progress in the Northwest Territories. Basically the surveys are intended to:

- 1) Assess the renewable resources as to their ability to sustain the local population.
- 2) Determine the degree of exploitation of these resources and the efficiency of their use.
- 3) Investigate and explain the social and economic factors affecting resource utilization.
- 4) Recommend ways and means whereby the standard of living of the local people might be improved.

As the reasons for these surveys are practical, the material presented in the reports is selected for its relevance in this respect; much academic material gathered in the course of the investigation which may have been taken into account in the deliberations is necessarily excluded from these reports. On the other hand, authors have been given wide latitude in their approach and have been encouraged to give consideration to key problems of a theoretical nature and to include such theoretical argument where its inclusion is thought to contribute to the understanding of the material presented and of the practical conclusions drawn.

The reports are published primarily for use within the Department, for distribution to other interested government agencies and for limited distribution to libraries, universities and organizations and individuals actively engaged in northern research, administration or development.

The following reports in this series have been published to date or are in preparation:

<u>A.E.S.R.</u>	<u>Title</u>	<u>Author</u>
58/1	Ungava Bay	J.Evans
60/1	The Squatters of Whitehorse	J.Lotz
62/1	Southampton Island	D.Brack
62/2	Tuktoyaktuk-Cape Parry	G.Abrahamson
62/3	Western Ungava	R.Currie
63/1	The Copper Eskimos	G.Abrahamson
63/2	Keewatin Mainland	D.Brack and D.McIntosh
63/3	Yukon Territory Littoral	R.Currie
65/1	Banks Island	P.Usher
65/2	Northern Foxe Basin	G.Anders

A.E.S.R.TitleAuthor

66/1	The Mackenzie Delta	D.Bissett
66/2	Rae-Lac La Martre	G.Anders
66/3	Frobisher Bay	S.MacBain (Miss)
66/4	East Coast-Baffin Island	G.Anders, Ed.
67/1	Lancaster Sound	D.Bissett
67/2	South Coast - Baffin Island	G.Higgins
67/3	South Shore-Great Slave Lake	D.Radojicic
67/4	Central Mackenzie	D.Villiers (Miss)
68/1	Keewatin Re-Survey	D.Radojicic
68/2	Central Arctic	D.Villiers (Miss)
68/3	Lower Liard Region	G.Higgins

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Abbreviations

A number of abbreviations are regularly employed throughout the report for the sake of brevity.

- D.O.T. - Department of Transport
- R.C.M.P. - Royal Canadian Mounted Police
- D.I.A.N.D. - Department of Indian Affairs and Northern Development
- G.S.C. - Geological Survey of Canada
- N.H.S. - Northern Health Services
- N.W.T. - Northwest Territories
- C.P.S. - Continental Polar Shelf Program

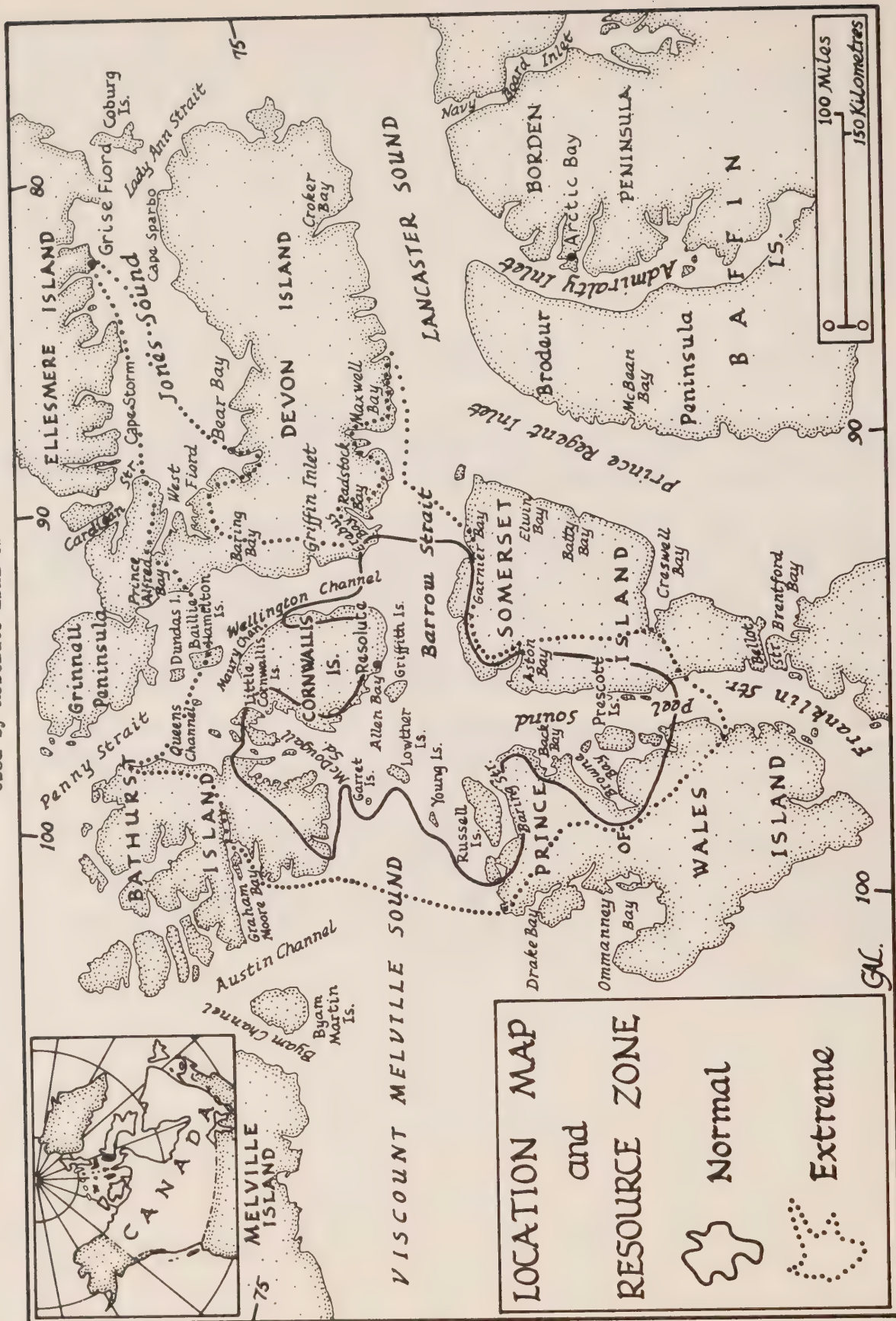
Introduction

Following World War II, a great deal of interest has centered on the Queen Elizabeth Islands as a result of various scientific research programs and, more recently, petroleum exploration.

The first part of this report consists of an overview to acquaint the readers with some general characteristics of the Queen Elizabeth Islands and, in particular, the islands close to Resolute. The second part of the report deals more specifically with Resolute and the Eskimo community. It should be noted that the resource zone of the Resolute Eskimos extends south of what is referred to as the Queen Elizabeth Islands group and includes Prince of Wales and Somerset Islands and the surrounding waters.

Resolute provides a unique example of government sponsored settlement of Eskimos from more southern latitudes and their adaptation to a mixed economy. Major emphasis is placed on the activities of the Eskimo community in terms of wage employment and resource harvesting. The major resource area of the Resolute Eskimos centers on the Barrow Strait area. The western limits extend from Murray Maxwell Bay on the east to Cape Cockburn on the west. On a north-south basis, the main resource area extends from Maury Channel to the central part of Peel Sound. Extreme limits are represented by the western part of Jones Sound and the Drake Bay area of Prince of Wales Island.

Figure 1 - Location Map and Resource Zone
Used by Resolute Eskimos



Part I - The Physical Setting

Climate

The climate of the Arctic Archipelago is a modified Arctic maritime type. Extreme winter temperatures are not as low and extreme summer temperatures not as high as they would be in a continental area at the same latitude.

Climate Controls

No solar radiation is received during the dark period in the high latitudes. The ground continues to lose heat into space. The obliqueness of the sun's rays and atmospheric conditions in high latitudes reduce its heating effect during the summer months. Cloud cover is extensive.

Air Masses which Affect the Canadian Arctic Archipelago

Maritime Polar (N.Pacific) warm winters, moist cool summer
Continental Polar - dry, cold in winter, dry warm summer
Maritime Arctic (Arctic Ocean, Beaufort Sea) relatively moist, very cold winter, relatively moist cold in summer
Continental Arctic - relatively dry cold winter, relatively dry cool in summer

Air Masses and Fronts

From October to February, the weather is generally anticyclonic (high-pressure areas) but deep cyclones (low-pressure areas) do occur moving to the northeast even beyond latitude 75° (in February). Such contain frontal systems although slow moving "occluded lows" are also observed which occasionally give precipitation. In March and April, cyclones are very rare except for slow-moving occluded lows. During June to August the weather is generally cyclonic but the cyclones are small and weak.

The eastern part of the Canadian Arctic region may occasionally be influenced by fully occluded low-pressure areas deflected to the west of Greenland. Counter clockwise circulation brings maritime polar air. This air is colder in summer than maritime polar air from the North Pacific. In winter it is warmer and may cause considerable precipitation.

Distribution of Land, Water and Ice

Large water areas exert climatic controls. During the summer, ice-filled waters with surface temperatures of near 30° F. prevent a warming up of surface air. Warm air from the south is cooled on contact with the cool water surfaces. In winter a slight moderating effect is experienced by radiation of heat from water through ice less than six feet thick. Coastal areas in winter undergo some moderation of temperature; this moderating effect extends less than twenty miles inland. In the Resolute area this and other factors affect the movement of caribou and muskoxen. While there are mountain barriers along the eastern sector of the Arctic Archipelago which exert climatic controls, the central portion consists of low topographic features.

Mean Temperatures

Cyclonic activities in the Davis Strait area extend westward as far as Cornwallis Island and Somerset Island. The coldest month for the Archipelago is normally February. Temperature records indicate a lack of uniformity in winter temperatures. Summer temperatures in contrast show a marked uniformity. The ice-filled waters of channels are stabilizing factors in respect to temperature variations.

Temperatures begin to rise in March but lowest winter temperature frequently occurs in March and the lowest recorded at Resolute -61°F . occurred in that month. The highest recorded temperature 61°F . occurred in July. Mean temperatures begin a gradual decline in August and freezing temperatures occur frequently by mid-August. Temperatures continue to drop with a decrease in the sun's declination in September. In the high Archipelago cooling is more rapid than on Baffin Island. A cool wedge forms in the central part of the Archipelago from the Sverdrup Islands to Melville Peninsula. In October the cold wedge extends southward. Warm areas develop in the Lancaster Sound and Hudson Strait area.

Extreme Temperatures¹

<u>Location</u>	<u>Extreme Maximum Temperatures Fahrenheit</u>		<u>Extreme Minimum Temperatures Fahrenheit</u>	
Resolute	61°	July	-61°	March
Isachsen	66°	July	-65°	March
Mould Bay	60°	July	-56°	March
Eureka	60°	July	-63°	March

An examination of average values of annual extreme high temperature indicates a small variation between reporting stations in the Archipelago.

Diurnal Variation in Temperature

A regular diurnal variation in temperature does not occur in the Archipelago. Changes in temperature arise from air mass change, occurrence or dissipation of cloud or fog changes in direction and strength of wind-speed. In winter the normal thermal structure of air in a vertical sequence consists of strong temperature inversions aloft. Turbulent mixing destroys the inversion and consequently an increase of wind-speed in water is almost invariably accompanied by a temperature rise regardless of wind direction.

Amplitude of diurnal range reaches a maximum in April with a return of the sun. A secondary maximum occurs in July. From August on, there is a decline in diurnal variation until the winter minimum is reached in November.

¹Thompson H. A. 1962 p.14,15,17,18

Annual Temperature Range

Annual temperature range increases northward on the whole with approximate values of 60 to 70 degrees from the Arctic Circle to the 75th parallel and 70 to 80 degrees north of the 75th parallel. Resolute is located just south of the 75th parallel. Mean summer temperatures are not high but mean winter temperatures are extremely low.

Precipitation

Snow may fall during any month in the Archipelago while rain is limited to the short summer period. (Accumulation of rime and hoarfrost is another source of precipitation). Snowstorms are frequent, beginning in September and records from Resolute, Eureka, Mould Bay and Isachsen indicate the greatest average snowfall occurs in September and October. At Resolute the average monthly snowfall is 4.8 inches in September, 6.4 inches in October, 2.2 inches in November and 2.0 inches in December. Snowfall decreases in the period January to the end of March.

Increasing amounts of water vapour in the air in the spring results in a spring maximum in monthly snowfalls at Resolute, Eureka, Isachsen. For example, the average monthly totals at Resolute are 2.4 inches in April and 2.9 inches in May as against a range of 1.0 to 1.1 for the months of January, February and March.

Rainfall

Maximum rainfall occurs in July or August. In the Lancaster Sound, Barrow Strait area there is an appreciable rainfall in June and September. Maximum rainfall occurs in August at Resolute. Rain occurs mainly as a light steady drizzle but heavy snows may occasionally occur. Whenever rain occurs it is almost invariably accompanied by fog which hinders flying during the summer months and can make water transportation difficult in ice-filled waters.

Ice Thickness

In 1962 and 1963, ice thickness observations were carried out on Resolute and these give some indication of the thickness of the sea-ice in the Barrow Strait area.

Currents

Arctic waters from Viscount Melville Sound and Wellington Channel enter Barrow Strait and Lancaster Sound. These cold currents are from the west. There is a movement of water from west to east through Lancaster Sound and southward along the eastern coast of Baffin Island. Along the south side of Lancaster Sound there is a strong surface current with a velocity estimated at 55 miles a day. This current is important in the removal of ice out through Lancaster Sound. At the mouth of Lancaster Sound, a warm ingoing or westward-moving surface current flows along the south coast of Devon Island.

Figure 2 - Ocean Currents



Figure 3 - Bathymetric Map of Lancaster Sound and Barrow Strait

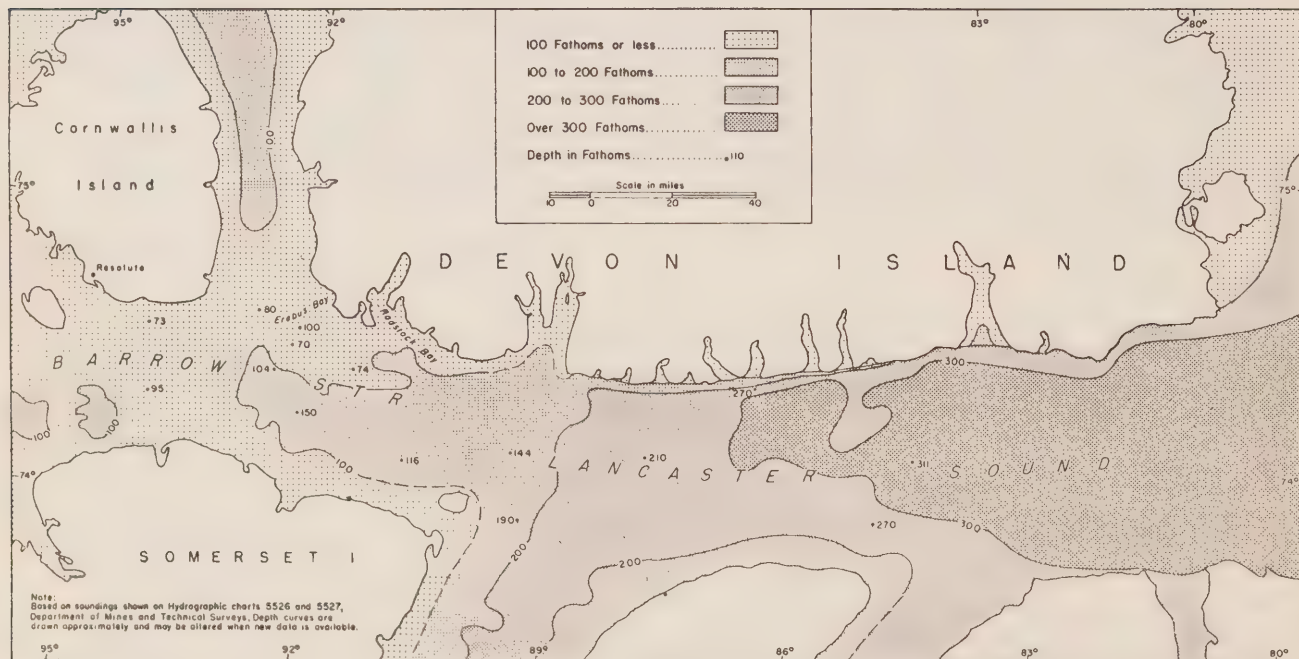


TABLE 1 - AVERAGES AND EXTREMES OF CLIMATIC DATA

STATION Resolute **

LAT 74° 43'N LONG 94° 59'W

ALTITUDE ABOVE M.S.L. 209 Ft.

	AIR TEMPERATURE							PERCENTAGE FREQUENCY OF DAYS WITH MINIMUM TEMPERATURES AT or BELOW					Mean Cloud Amount 10ths of Sky Covered
	Mean Daily	Mean of Daily		Mean of Monthly		Highest Recorded	Lowest Recorded	-10°F	-20°F	-30°F	-40°F	-50°F	
		Maximum	Minimum	Maximum	Minimum								
	°F	°F	°F	°F	°F	°F	°F						
January	-25.3	-18.7	-31.8	6	-48	23	-53	95	83	69	23	1	3.9
February	-28.6	-22.2	-35.0	0	-49	7	-57	98	92	77	33	5	4.1
March	-24.6	-18.2	-31.0	4	-47	20	-61	95	84	60	25	2	4.0
April	- 7.7	- 0.4	-15.0	18	-34	30	-40	69	42	13	#	0	4.8
May	13.6	19.1	8.1	31	- 9	40	-20	8	0	0	0	0	6.9
June	33.0	37.2	28.8	49	16	57	8	0	0	0	0	0	7.2
July	40.3	45.1	35.4	57	30	61	28	0	0	0	0	0	7.5
August	37.3	41.4	33.2	52	26	59	17	0	0	0	0	0	8.0
September	24.1	27.6	20.6	38	4	48	0	0	0	0	0	0	8.3
October	5.7	11.2	0.1	26	-19	32	-30	22	4	#	0	0	7.5
November	-12.9	- 6.8	-19.0	12	-34	27	-43	84	52	13	1	0	4.6
December	-20.8	-14.5	-27.0	3	-42	17	-51	93	77	47	10	0	4.0
Year	2.8	8.4	- 2.7	57	-52	61	-61						5.9
Period	1951-1960					1948-1960		1951-1960					

	PRECIPITATION						WIND			MEAN DAYS WITH		DEGREE DAYS		
	RAIN		SNOW		TOTAL (WATER)		MOST PREV- ALENT		Average Speed m.p.h.	Fog-Visibility less than 5/8 mile	Blowing Snow-Visibility 6 miles or less	Below 65°F	Below 32°F	Above 32°F
	Mean Amount	Days	Mean Amount	Days	Mean Amount	Maximum fall in 24 hours	Direction	Percentage						
	In.	No.	In.	No.	In.	In.				a				
January	0	0	1.0	5	0.10	0.06	NW	31	11.9	1	14	2,830	1,814	0
February	0	0	1.1	5	0.11	0.07	E	22	11.5	2	11	2,678	1,738	0
March	0	0	1.0	5	0.10	0.09	NW	22	10.4	1	10	2,768	1,728	0
April	T	*	2.4	7	0.24	0.20	NW	25	10.9	1	8	2,217	1,204	0
May	T	*	2.9	9	0.29	0.10	NW	25	11.6	3	5	1,597	572	
June	0.30	2	1.5	4	0.45	0.77	NW	27	12.6	5	1	960	68	96
July	0.80	8	0.4	1	0.84	0.66	NW	25	12.1	8	0	766	0	258
August	1.22	8	1.1	3	1.33	0.99	NW	24	12.3	9	0	856	10	177
September	0.13	2	4.8	10	0.61	0.25	NW	28	12.5	5	2	1,233	245	10
October	T	*	6.4	16	0.64	0.37	NW	29	12.5	2	12	1,835	837	0
November	0	0	2.2	7	0.22	0.14	NW	25	11.0	1	9	2,292	1,340	0
December	0	0	2.0	7	0.20	0.08	NW	28	10.4	*	12	2,641	1,641	0
Year	2.45	20	26.8	79	5.13	0.99			11.6	38	84	22,673	11,197	541
Period	1951-1960											1951-60	1951-1960	

Thompson, H.A., 1965, p. 30

** Station re-located Oct. 1953

Average less than 1 percent

* Average less than 0.5

a Period 1955 - 1960

TABLE 2 - Monthly and Annual Averages of Daily Mean Temperature

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Period
Isachsen	-31.4	-33.8	-30.1	-13.0	11.1	31.3	38.5	34.3	16.7	- 2.6	-18.9	-26.8	- 2.1	12
Mould Bay	-28.4	-31.8	-26.0	- 9.3	12.5	31.6	38.8	34.9	20.6	- 0.5	-15.9	-24.8	0.2	12
Alert	-25.5	-27.4	-27.3	-11.1	11.7	31.8	39.1	33.4	14.9	- 3.7	-14.5	-22.4	- 0.1	10
Eureka	-34.0	-36.1	-34.4	-17.2	14.2	37.1	42.4	38.6	19.7	- 6.7	-22.5	-32.6	- 2.6	13

TABLE 3 - Monthly and Annual Averages of Daily Maximum Temperature

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Period
Isachsen	-25.0	-27.6	-23.9	- 6.0	16.6	35.3	42.8	38.4	21.5	3.8	-12.4	-20.7	3.5	12
Mould Bay	-21.2	-25.3	-19.0	- 1.5	18.1	35.8	43.4	39.0	25.0	6.7	- 9.4	-18.6	6.1	12
Alert	18.2	20.0	-19.9	3.5	17.6	36.3	44.7	37.6	20.0	2.7	- 7.8	-15.3	6.2	10
Eureka	-27.4	-29.8	-28.0	- 9.3	20.5	41.8	47.9	42.9	24.1	- 0.2	-16.1	-27.1	3.3	13

TABLE 4 - Monthly and Annual Averages of Daily Minimum Temperature

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Period
Isachsen	37.8	-40.0	-36.3	-19.9	5.6	27.2	34.1	30.1	11.8	- 8.9	-25.4	-32.8	- 7.6	12
Mould Bay	35.6	38.3	-32.9	-17.1	6.8	27.3	34.1	30.8	16.2	- 5.6	-22.4	-30.9	- 5.6	12
Alert	-32.7	-34.8	-34.6	-18.7	5.8	27.3	33.5	29.1	9.8	-10.0	-21.1	-29.4	- 6.3	10
Eureka	-40.5	-42.4	-40.7	-25.1	7.9	32.3	36.8	34.3	15.3	-13.2	-28.9	-38.1	- 8.5	13

TABLE 5 - Extreme Minimum Temperature

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Period
Isachsen	-63	-60	-65	-44	-21	6	26	8	-17	-35	-50	-60	-65	12
Mould Bay	-55	-58	-56	-43	-20	8	25	14	-13	-33	-46	-63	-63	12
Alert	-54	-53	-54	-50	-17	10	22	5	-15	-32	-40	-51	-54	10
Eureka	-60	-62	-63	-50	-24	8	28	17	-15	-43	-48	-57	-63	13

TABLE 6 - Extreme Maximum Temperature

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Period
Isachsen	25	- 5	17	30	36	62	66	58	37	29	25	15	66	12
Mould Bay	15	13	13	29	35	56	60	57	46	32	19	15	60	12
Alert	32	30	28	30	47	63	68	59	42	33	31	17	68	10
Eureka	30	10	8	26	42	64	67	59	42	39	29	13	67	13

Source: Thomson, H.A., 1962.

TABLE 7 - Monthly and Annual Precipitation in Inches

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Resolute	.00 1.0 .10	.00 1.2 .12	.00 1.2 .12	T 2.2 .22	T 3.6 .36	.32 1.9 .51	.89 0.4 .93	1.09 1.5 1.24	.18 5.5 .73	T 6.3 .63	.00 2.3 .23	.00 1.7 .17	2.48 28.8 9.36 Rain Snow Precipitation
Isachsen	.00 0.6 .06	.00 0.6 .06	.00 0.4 .04	.00 1.5 .15	T 3.0 .30	.01 1.3 .14	.65 1.9 .84	.64 1.6 .80	.07 6.2 .69	.00 3.4 .34	.00 1.5 .15	.00 0.6 .06	1.37 22.6 3.63 Rain Snow Precipitation
Mould Bay	.00 1.2 .12	.00 0.7 .07	.00 1.2 .12	.00 1.1 .11	T 2.5 .25	.06 1.1 .17	.60 1.2 .72	.53 1.9 .72	.11 3.2 .43	T 2.5 .25	.00 1.0 .10	.00 1.1 .11	1.30 18.7 3.17 Rain Snow Precipitation
Eureka	.00 1.1 .11	.00 0.7 .07	.00 0.6 .06	.00 0.6 .06	.00 1.2 .12	.08 0.3 .11	.51 0.3 .54	.41 0.5 .46	T 4.2 .42	.00 2.8 .28	.00 0.9 .02	.00 0.8 .08	1.00 14.0 2.40 Rain Snow Precipitation

Source: Thompson, H.A. 1965 p.5,6.

These averages are based on the period of record up to ten years. No adjustment factor has been used.

TABLE 8 - Wind Direction, and Percentage Frequency, by Directions at Resolute, 1948-1950

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
North	14	11	8	8	13	9	16	12	17	23	14	12	13
Northeast	10	6	10	7	12	11	10	11	8	26	16	15	12
East	8	7	13	9	9	10	13	12	8	8	13	20	11
Southeast	11	4	10	12	17	27	30	18	11	10	12	11	14
South	1	5	3	5	6	8	5	6	3	1	4	2	4
Southwest	5	6	7	10	5	9	4	7	9	5	2	4	6
West	6	7	10	6	5	7	4	7	12	3	7	7	7
Northwest	44	49	37	41	32	18	18	26	31	24	30	25	31
Calm	1	5	2	2	1	1	0	1	1	0	2	4	2
Average Wind - Speed (m.p.h.)	10.9	8.4	8.9	8.6	10.1	11.3	12.1	12.3	12.5	13.5	9.6	9.1	10.6

TABLE 9 - Ice Observations, Resolute^{*}

Date 1962	Ice Thickness	Snow Depth	Date 1963	Ice Thickness	Snow Depth
Oct. 4	Ice forming along shore.		Feb.15	60	13
Oct. 7	Bay frozen over.		Feb.22	61	13
Oct.14	12	Nil	Mar. 1	61	12
Oct.20	15	1	Mar. 8	62	14
Oct.29	17	2	Mar.15	64	16
Nov. 2	21	2	Mar.22	65	18
Nov.11	24	2	Mar.30	75	12
Nov.24	37	3	Apr. 5	75	14
Dec. 1	37	5	Apr.12	77	16
Dec. 9	41	6	Apr.19	80	14
Dec.17	40	2	Apr.26	81	17
Dec.21	42	4	May 4	75	18
Dec.28	45	4	May 10	75	23
			May 17	76	17
			May 24	74	24
1963			May 31	79	17
Jan. 5	48	6	June 7	81	14
Jan.14	47	6	June 14	78	13
Jan.18	49	6	June 21	83	5
Jan.25	53	7	June 29	79	5 water
Feb. 1	54	8	July 6	75	-
Feb. 8	56	13	July 12	65	Nil

Source: Department of Transport Meteorological Branch-Cir. 3918, Oct.1963, p.12

^{*}Observation site: Approximately in the center of Resolute Bay. Approximately, $\frac{1}{2}$ mile southeast of the "Tide Shack".

Tides

In general, tides increase towards the east in the sounds. The mean tide at Resolute Bay is 4 feet while spring tides of 14 feet have been recorded at Dundas Harbour. Tides affect the formation of shore leads and the delay of ice formation in Barrow Strait and Resolute Bay.

Winds

Wind is probably the most important factor in breaking up the ice in summer and moving it eastward into Baffin Bay. As a rule, northwest winds hasten the clearing while south to southeast winds delay it. The clearing of Lancaster Sound often progresses to about 90 degrees west longitude, that is, about 100 miles east of Resolute and then stalls, awaiting break-up and the clearing of Barrow Strait and Wellington Channel. This usually is completed during the second half of August.

Resolute has a dominant northwest wind that hastens the eastward movement of the ice. This wind, aided by the cold Arctic current through Wellington Channel, concentrates most of the ice along the south shore of Barrow Strait and Lancaster Sound. However, strong winds from the east to northeast are common during the navigation season and these tend to retard the eastward drift of ice.

Ice Chart Legend for Figures 4, 5, 6, and 7

ICE CHART LEGEND

TOTAL CONCENTRATION



open water or
≤0.1 ice cover



0.1 to 0.3
ice cover (very open pack)



0.4 to 0.6
ice cover (open pack)



0.7 to 0.9
ice cover (close pack)



1.0 ice
cover (very close pack)

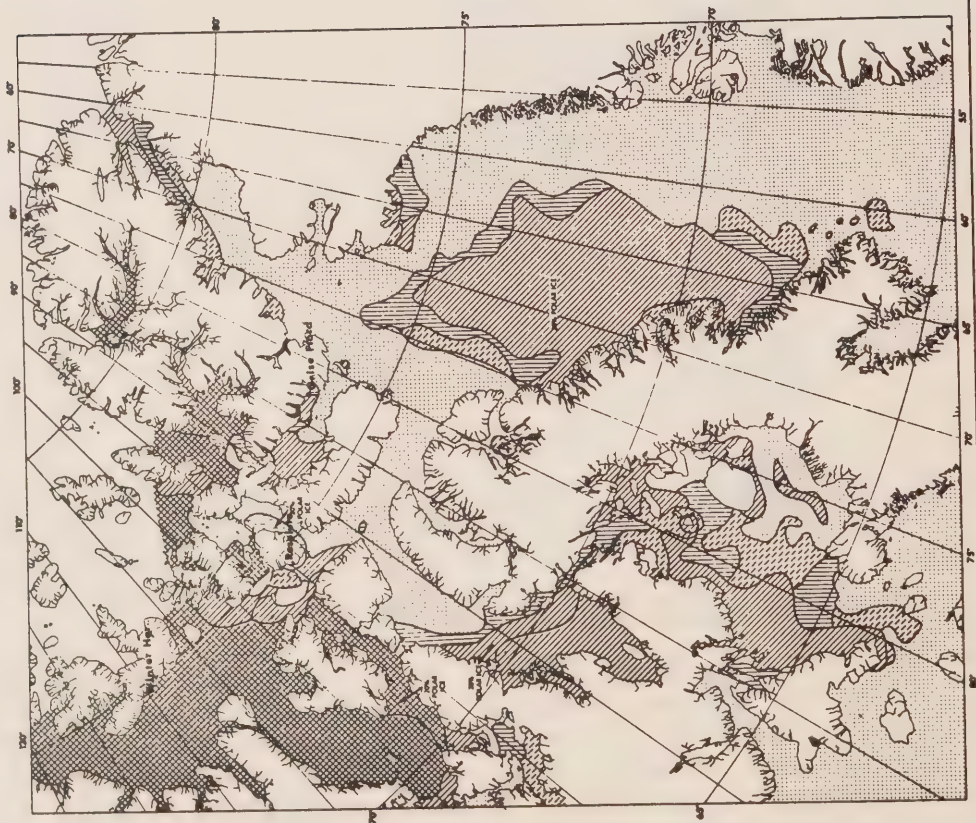


Fast ice

Climate as a Control Agent in Human Activities

The climate of the Archipelago acts as a limiting factor on human activities. For the Eskimos of Resolute, the late winter and spring periods are of maximum importance in terms of resource utilization. In winter the absolute lack and later minimal amounts of daylight, and low temperatures are deterrents to resource harvesting. In the brief summers, ice and fog are deterrents to extended trips by small boat. The autumn is a stormy period,

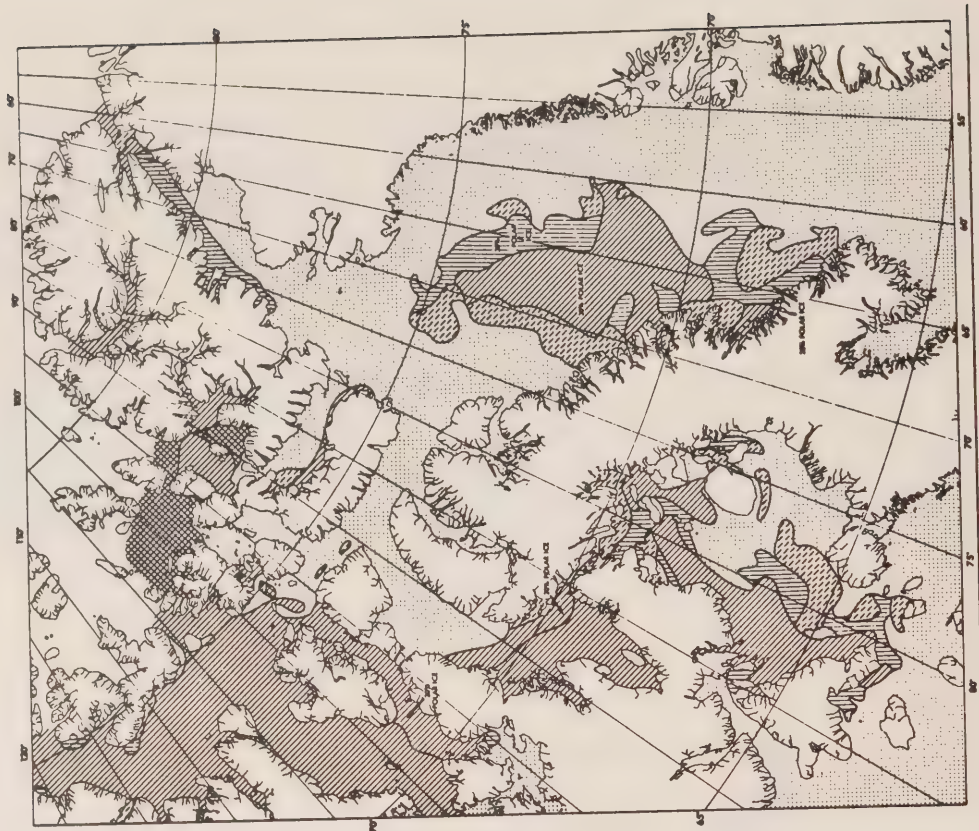
Figure 4 - Ice Conditions on August 13, 1965



ICE CONDITIONS ON AUGUST 13, 1965.

The considerable disintegration of the ice in the Home Bay area was assisted by a general northward ice drift throughout Baffin Bay. This unusual motion which was also evident on the previous chart, resulted in a broad tongue of ice as far north as Latitude 76°N. Rapid melting was again evident in central Foul Bay.

Figure 5 - Ice Conditions on August 25, 1965



ICE CONDITIONS ON AUGUST 27, 1965.

Ice concentrations continued to decrease in Barrow Strait, James Sound, and eastern Foul Bay as well as along the edges of the Beaufort Bay part. Concentration still persisted in northern Baffin Bay and in the approaches to Hall Bay.

during which travel by boat or by dogteam or ski-doo in areas of newly forming ice are hazardous. For non-Eskimos, spring and summer are the periods of maximum activity.

In July and August, maintenance and construction work is at a peak and the sea-lift occurs in the latter part of August and early September. There is a general retreat into elaborate building complexes which reduces the necessity of coping with the environment.

Cornwallis Island

Physiographically, Cornwallis Island (2,850 square miles) consists of a plateau area in the southeastern quarter of the island and low-lying plains to the west and northwest. The plateau reaches an average elevation of about 1,000 feet and its surface is undulating and truncates several major structures. The plateau is crossed by several streams which are steep in gradient. Stream canyons and waterfalls are numerous. Large sectors of the plateau are devoid of drainage lines. The stream systems flow on a west-east direction. The plains to the west and northwest are dissected by streams flowing through generally well graded stream channels. Lakes are nowhere numerous on the island although ponding occurs on the plains. Little Cornwallis (190 square miles) appears as an extension of the plains area to the west and northwest of Cornwallis Island with a maximum elevation of 525 feet. Few sheltered harbours exist on the eastern and northern coasts of Cornwallis Island. Along the southwest coast, the Allen Bay area with its small islands offers some protection in storms.

Vegetation

The plateau area of Cornwallis Island is virtually devoid of vegetation except in the stream canyons and broad valley floors close to the sea. The lowland area on the west and northwest of the island is virtually covered with vegetation. Similar conditions pertain on Little Cornwallis Island. Vegetation occurs on calcareous shale, argillaceous shale and clay. The relatively pure limestone and dolomite formations do not support vegetation. The vegetated west and northwestern parts of Cornwallis and Little Cornwallis support small numbers of caribou and muskoxen.

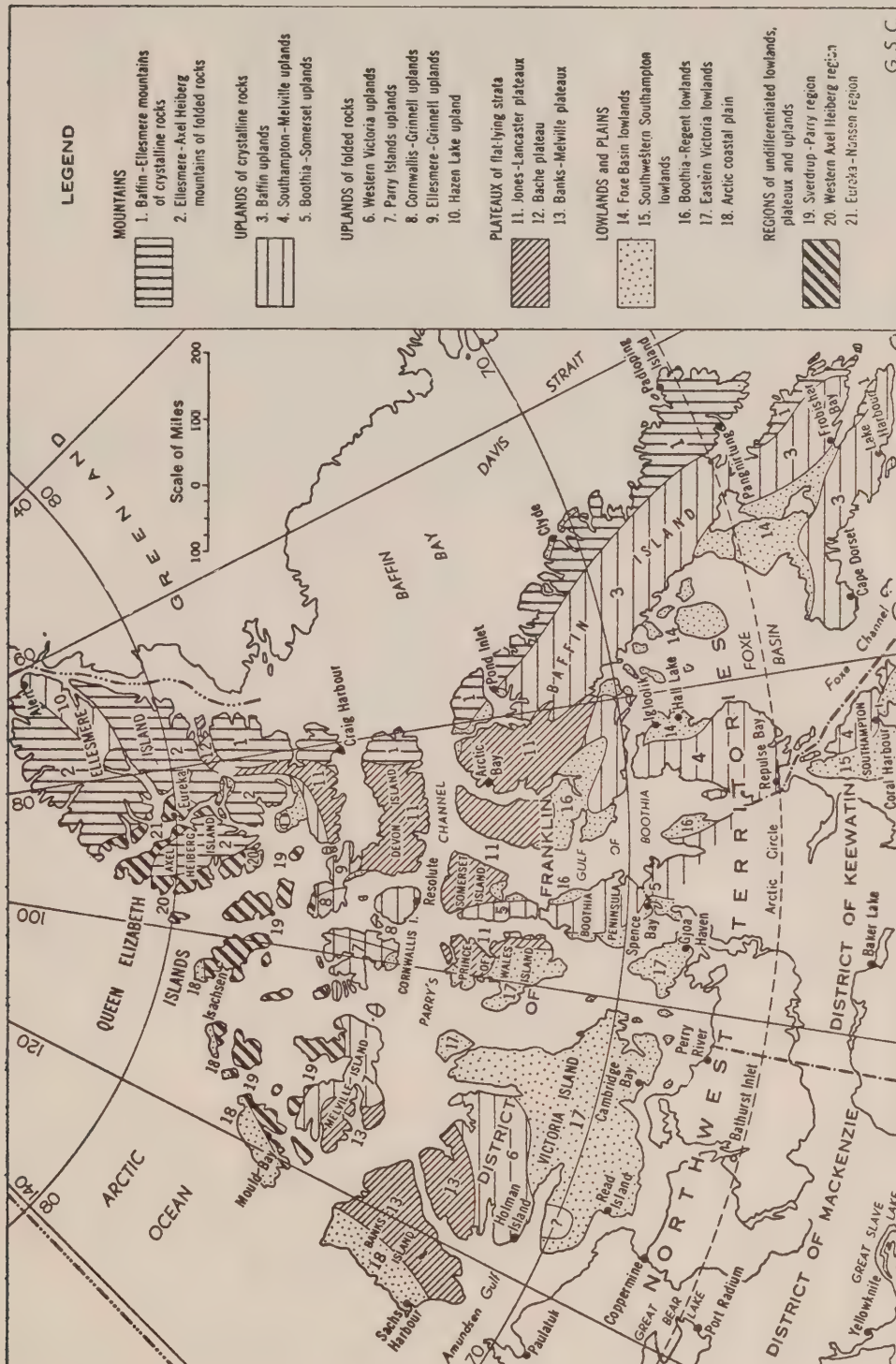
Bathurst Island Group

The Bathurst Island group is composed of the central Bathurst Island, Alexander, Massey, Vanier and Cameron Islands along the northwest flank, and Helena and Sherard Osborn Island on the north coast. A number of small inlets are included in the group. The total land mass encompasses 7,000 square miles. Bathurst Island is dissected by inlets such as May and Erskine on the northwest, Goodsir Inlet on the east coast and Bracebridge Inlet and Graham Moore Bay on the southwest.

Main Physiographic Division	Location	General Characteristics
Low plateau	Southern quarter of area, south part of Bathurst Island.	Advanced stage of dissection. Gently undulating. Local relief rarely exceeds 300 feet (range from a few hundred to perhaps 1,500 feet).

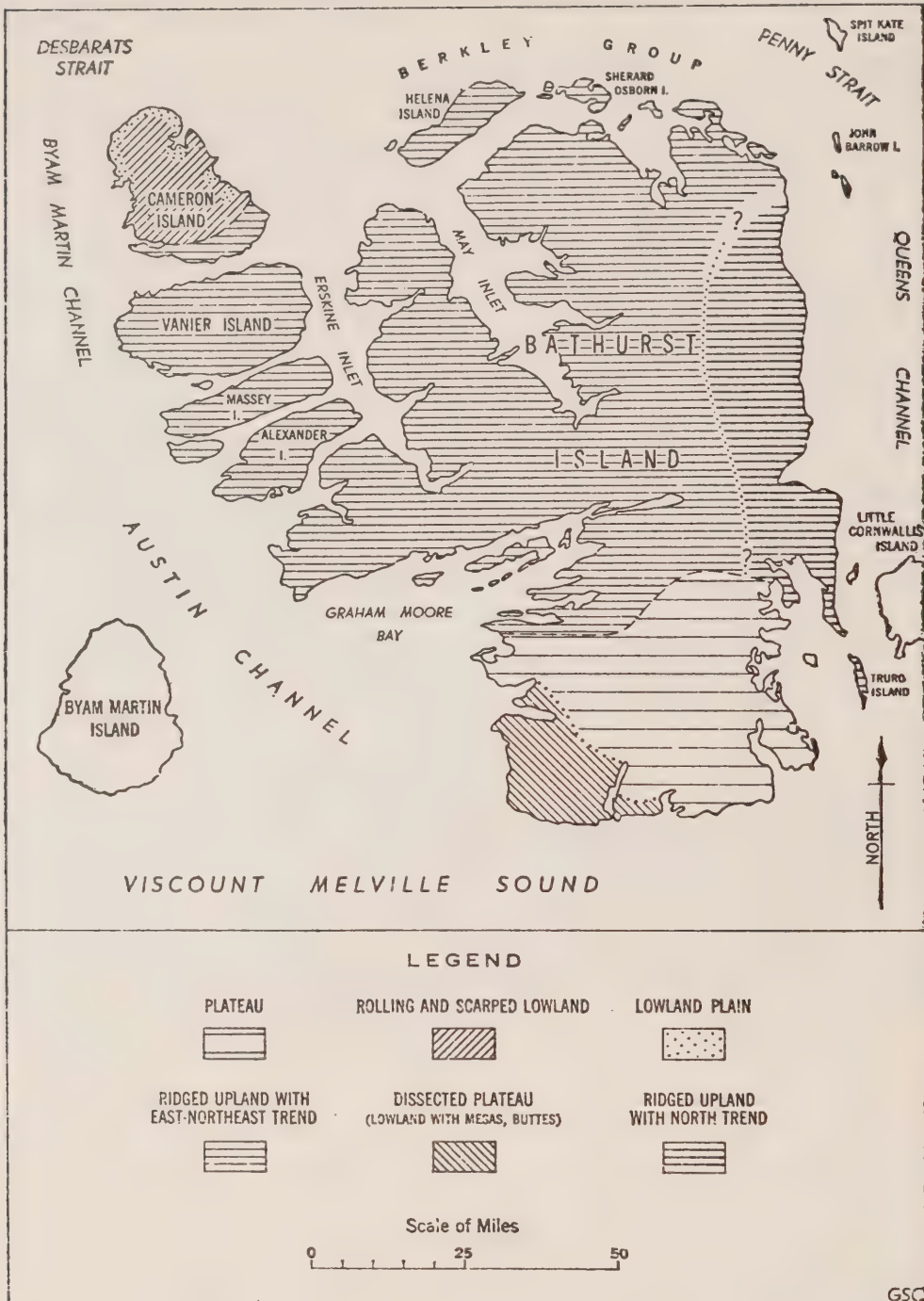
(Continued)

Figure 8 - Provisional Physiographic Divisions of the Arctic Archipelago



Provisional physiographic divisions of the Arctic Archipelago.

Figure 9 - Physiographic Divisions of Bathurst Island Group



Physiographic divisions of Bathurst Island group.

Main Physiographic Division	Location	General Characteristics
Ridged Upland	Occupies three quarters of Bathurst Island group with exception of plateau to the south and small lowland in northwest corner.	Ranges from few hundred feet above sea level with a local relief of commonly less than 500 feet. Some streams have cut narrow rocky gorges more than 500 feet deep.
Lowland	Occupies Cameron Island with exception of a ridged upland in the southern part of the island.	Lowland plain less than 100 feet above sea level.

The Resolute Eskimos are most familiar with the southeastern part of Bathurst Island. They have travelled overland between Goodsir Inlet and Bracebridge Inlet, and along the east coast to the Queens Channel area in winter.

The Bathurst Island group offers a striking contrast to Cornwallis Island in terms of vegetation. Generally, the group offers sufficient forage to support large numbers of caribou and muskoxen. In winter, drifting and packing of snow on the south and western parts of Bathurst Island cause movements of caribou and muskoxen to better foraging areas on the ridged uplands or along the coast. A pattern of almost continuous vegetation broken by rock outcrops occurs in the southern part of the Bathurst Island.

There is a general scarcity of large lakes and the majority of small lakes occur close to the coastline in the southern part of Bathurst Island. Drainage patterns are typically dendritic in the southern part of Bathurst Island. Northward drainage patterns become typically trellised with streams at approximately right angles to one another, either following the main valleys between the ridges or cutting directly across successive valleys and ridges in a series of gaps some of which are aligned.

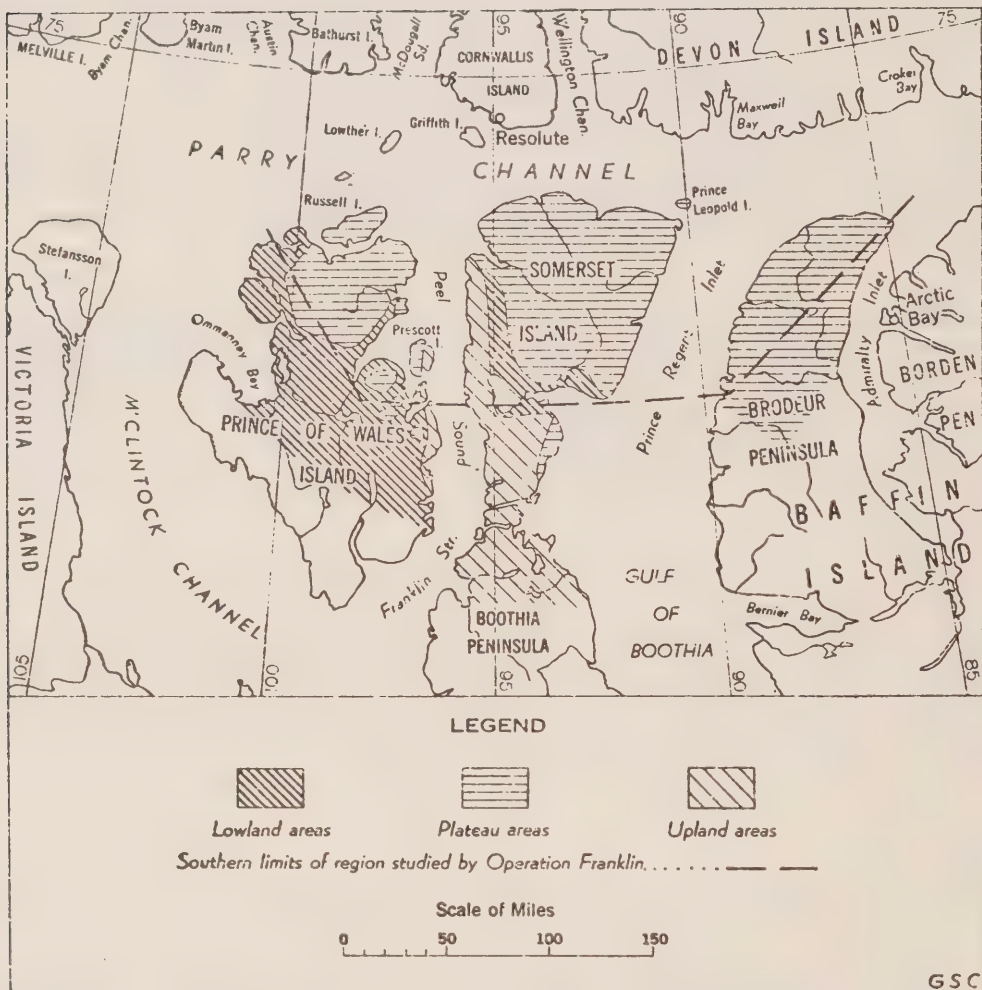
Somerset Island

Somerset Island is predominantly a plateau, built of low-lying sedimentary strata. The plateau extends north and east from Cape Granite on the west coast to the head of Cresswell Bay on the east and south to Hazard Inlet. On the west and the south the plateau merges with lowland, which forms a narrow strip cutting across the island and along the shore of Cresswell Bay. The general elevation of the plateau is between 800 and 1,500 feet. In the eastern sector, the plateau is smooth, nearly flat with a landscape very similar to that on Brodeur Peninsula. The plateau is covered with gravel rubble. On the north coast, the cliffs of the plateau form bluffs between which undulating and sloping ground connect the plateau and the shore.

South of Aston Bay the land is rocky, relatively rugged upland. The upland widens from north to south having a width of eight to twelve miles (altitude 300-800 feet) to Bellet Strait where it extends from the east and

west coast and reaches an altitude of 1,600 feet. On the plateau, most of the streams display a dendritic pattern with steep walled stream valleys. In the eastern part of the island the stream valleys appear as cliff-walled gorges. Lakes are scarce with the exception of small lakes near the north coast and along the east coast between Fury Point and Batty Bay. In the upland country along the west coast of the island most of the streams run in fracture gullies.

Figure 10 - Physiography, Prince of Wales and Somerset Island



Physiographic subdivisions of islands south of Parry Channel.

Prince of Wales Island

The main physiographic features of Prince of Wales Island are:

- (a) Plateau - Consisting of the northern third of the island and several mesa-like outlets between Browne Bay and Cape Eyre, including islands at the mouth of Browne Bay, the west half of Prescott Island and Russell and Edgeworth Islands. The plateau varies from Russell Island and between Baring Channel and Backs Bay with a maximum height of 300 feet to a region of low hummocks and gentle slopes leading to wide shallow valleys.

The crudely developed dendritic systems of the plateau drain in a rough radial system. Small lakes commonly occur both on the higher northern plateau and in the valleys.

- (b) Lowland Areas - The lowland area covers approximately two thirds of the island to the west and south of the plateau. The flat lowland with an elevation of less than 250 feet above sea level, occasionally is gently undulating or somewhat hummocky. Lakes are numerous in places making up one quarter of the surface area. Some lakes are as much as 20 miles long. The coastline is low with many offshore islands and abandoned beaches are visible on higher ground near the coast.

The Plateau of Central and Southwestern Devon Island

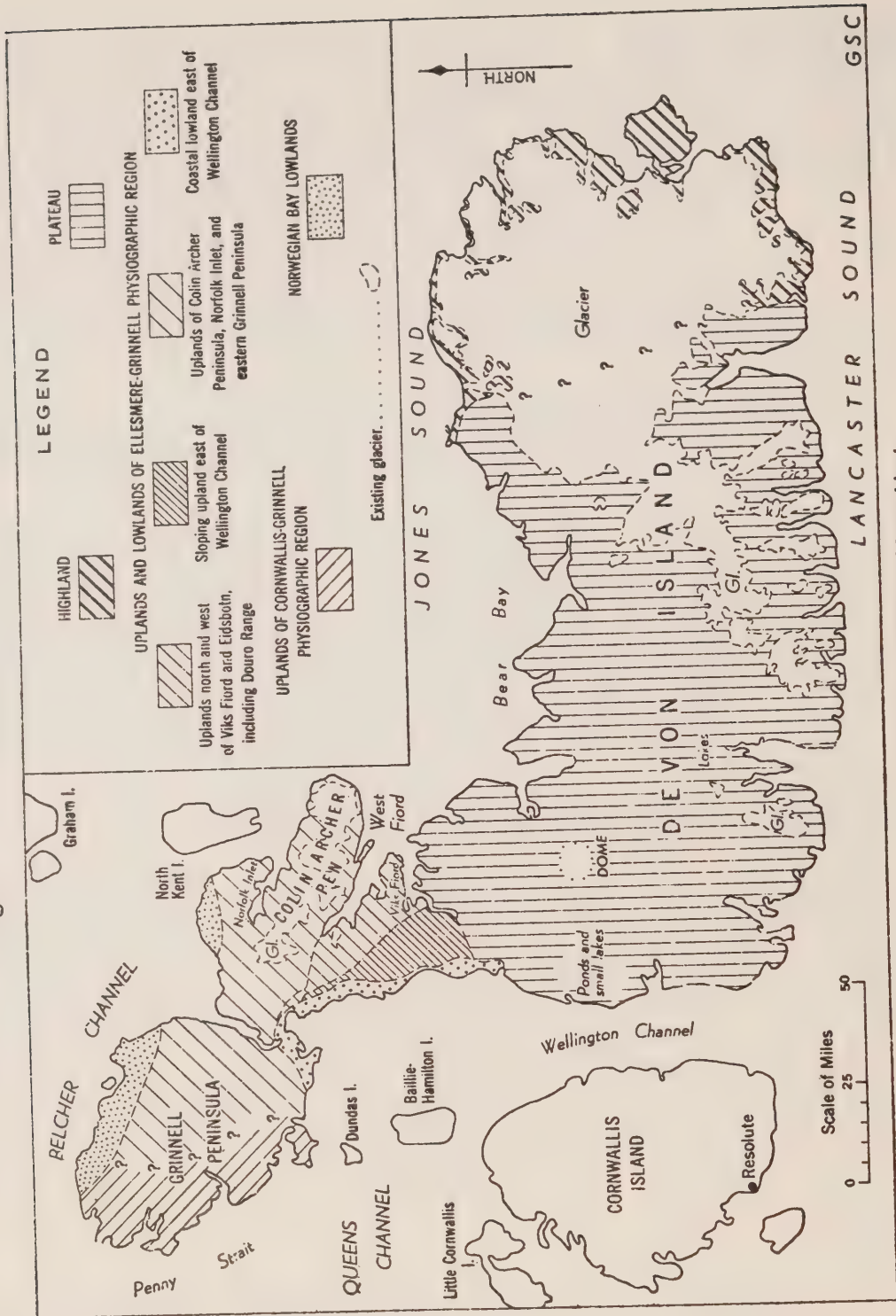
The plateau, characterized by a well preserved featureless inland surface and continuous coastal cliff indented by fiords and steep-walled bays exposing mainly undeformed strata, forms more than half of Devon Island. The eastern and higher plateau surface is buried under ice and is transitional to the highland. The plateau surface is about 2,000 feet above sea level, at the ice cap edge. Westward, the plateau slopes gently to the west coast. Near the west coast the elevation is between 500-800 feet. The smooth and relatively featureless surface has been preserved with little modification to the very edge of the coastal cliffs or dissecting valleys. Vegetation is generally poor in terms of supporting caribou. Muskoxen are found in a number of scattered locations with a major concentration in the Cape Sparbo area on the northeast, coastal lowland.

Northwest Devon Island

The northwestern part of Devon Island north of a line between Draglabeck Inlet and Viks Fiord is mostly irregular, undulating or ridged upland, flanked on the west and north by narrow belts of lowland.

Due to distance, Eskimos from Resolute do not travel into this area but have reached the area while travelling on R.C.M.P. patrols from Grise Fiord or with various survey parties. It cannot be considered as part of the general resource area currently being utilized by Resolute Eskimos. A Resolute Eskimo reported killing ten caribou in 1963 just north of Prince Alfred Bay.

Figure 11 - Physiography, Devon Island



Physiographic subdivisions of Devon Island.

The Archipelago may be divided into a number of geological regions. These are:

Shield Areas

Baffin - Ellesmere Belt

Melville - Southampton Belt

Boothia Arch

Wellington Arch

Minto Arch

Arctic Lowlands and Plateaux

Foxe Basin

Victoria Strait Basin

Wollaston Basin

Jones - Lancaster Sound Basin

Melville Basin

The Archipelago is geologically and physiographically a northward extension of the North American continent. The exposed portions are, in general, successively younger from southeast to northwest.

The Archipelago may be further divided into: a stable region, a relatively mobile region, and a coastal plain.

Shield Areas

The Baffin Ellesmere Belt is the largest and most easterly of the Precambrian areas. It occupies the larger part of the Baffin Island and Bylot Island and also the eastern part of Devon Island and stretches about halfway along the east coast of Ellesmere Island. The Belt is composed chiefly of Archaean gneisses and granitic rocks.

The structure of the gneisses is complex but a northwesterly trend is prevalent in southern Baffin Island. Proterozoic strata are found in northern Baffin Island are gently flexed along northwest to northerly trending axis. Flat-lying or gently inclined Proterozoic strata also occur at the north end of the belt on Ellesmere Island.

Precambrian rocks underlie in part the stable region and these are an extension of the Canadian shield. Elsewhere the stable region is underlain by generally flat-lying to gently inclined Paleozoic strata, mantling the Precambrian sub-strata and forming the Arctic lowlands and plateau.

Figure 12 - Geological Regions and Sub-divisions
of the Arctic Archipelago



Geological regions and subdivisions of the Arctic Archipelago.

The Innuitian range, an unstable region, exists between the Arctic lowlands and plateaux. The Innuitian range has been tectonically active from the Paleozoic to some time in the Tertiary. Paleozoic and Mesozoic rocks predominate but rocks of all ages are included in the Innuitian region. To the west, both the Innuitian Region and Arctic lowlands and plateaux, are bordered by the Arctic Coastal Plain which forms the western and narrow margin of the Archipelago.

Innuitian Region

Cornwallis Fold Belt

Parry Islands Fold Belt

Central Ellesmere Fold Belt

Northern Ellesmere Fold Belt

Sverdrup Basin: Eureka Sound Fold Belt: western area

The Cornwallis fold belt occupies all of Cornwallis Island, the western and central parts of Grinnell Peninsula, a fringe along the east coast of Bathurst Island and small islands south of Cornwallis Island. The age range of the deformed strata ranges from Ordovician to late Silurian or early Devonian. These are overlain by flat-lying to gently dipping beds of latest Silurian or earliest Devonian and of Pennsylvanian ages including the folding which occurs during a Caledonian orogeny.

Arctic Coastal Plains and Continental Shelf

The Arctic Coastal Plains are overlain by Tertiary and Pleistocene sediments and dip oceanward. Very little is known about the sequence of sediments but in northern Yukon up to 30,000 feet of Mesozoic rocks are present. It is expected that Tertiary sediments would overlie the Mesozoic on the Continental Shelf and the combined thickness could be considerably higher. The Continental Shelf extends between two to three hundred miles west of the Arctic Islands and could be a potential oil and gas province, but the permanent polar-ice conditions may place many restrictions on exploration in offshore operations.

Arctic Lowlands

The Arctic Lowlands consist of several basins lying between the Sverdrup Basin and the Canadian Shield. It is not known whether they are structural or depositional in origin. Sediments consist of carbonates and clastics, and range in age from Cambrian to Mesozoic and Tertiary. Thickness of sediments probably does not exceed 10,000 feet and the principal rocks are carbonates of Ordovician and Silurian age.

Franklinian Geosyncline

This Franklin Geosyncline encompasses sedimentary basins that include the Ellesmere fold belt, Cornwallis and Parry Island fold belts. Most of the structures are generally characterized by long, wide, symmetrical folds. Sediments range in age from Cambrian to Permian and thickness may vary up to 20,000 feet. Most of the exploration to date in the Arctic has been concentrated in this basin, three wells have been drilled and abandoned.

Figure 13 - Sedimentary Geological Provinces, Canada Lands



All the wells encountered porous sections and, on tests recovered, large volumes of salt water. A small gas show was recorded, in the Dome et al Winter Harbour No. 1 well, just below the permafrost zone.

Sverdrup Basin

The Sverdrup Basin may contain one of the thickest sequence of sediments in North America. Composite thicknesses are in the order of 60,000 feet and range in age from late Paleozoic to early Tertiary. The principal rocks are Pennsylvanian, Permian and Triassic in age. Reservoir rocks consist of thick sections of limestone reefs and sandstone. The Bjorne formation of Triassic age contains oil-sands on Melville Island which is evidence that source rocks and reservoirs are present in the basin.

Considerable surface mapping has been conducted by oil companies and government geologists. These surveys indicate that many of the major structures are large symmetrical folds that include Tertiary beds. In certain areas piercement domes, evaporite diapirs, sills and dykes were mapped. The presence of these secondary structures may not have an adverse effect on hydrocarbon accumulation but can, in effect, act as traps much like faults and stratigraphic pinch-outs.

Petroleum Exploration¹

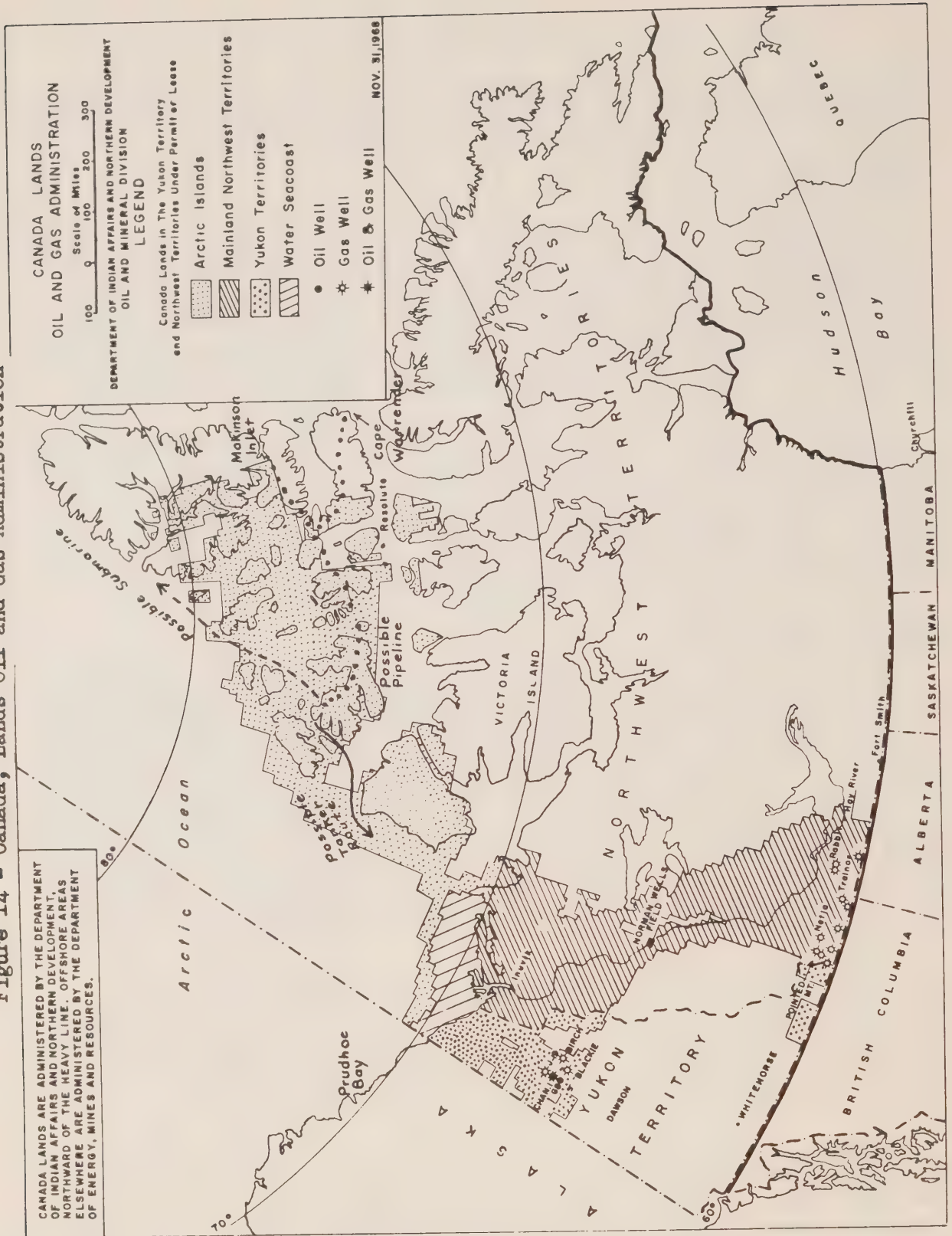
Petroleum exploration in the Queen Elizabeth Islands is still in the initial stages of basic exploration and the wildcat drilling stage. Both stages require large initial investments. Petroleum exploration developments elsewhere can radically affect interest in the high Arctic. Oil drilling on more accessible parts of the continental shelf and the discovery of oil at Prudhoe Bay, Alaska, both have affected the interest of petroleum exploration companies. It must be assumed that only very large fields will warrant exploitation, and marginal fields will be ignored. The development and exploitation stages cannot begin until oil in sufficient quantity has been discovered in the high Arctic. A number of well-qualified experts have postulated on the economic feasibility of developing Arctic oil.

The logistics of the economics of oil and gas development were thoroughly investigated by Quirin (1962). Some adjustments would have to be made for cost escalation in the six years which have passed since the publication of his report. His report deals with the logistics of moving oil by pipeline, surface tankers and nuclear submarines. Projected exit points were Godthaab, Greenland, Skagway, Alaska.

Current planning is in the direction of a pipeline system beginning at Melville Island and terminating at Cape Warrender on Devon Island or Mackinson Inlet on Ellesmere where tankers could load from bulk storage facilities and proceed to European or United States markets. This would eliminate navigation hazards and extreme distance in water transportation in the Lancaster Sound and Barrow Strait areas.

¹The reader is asked to consult the bibliography for technical reports on petroleum potentials in the high Arctic.

Figure 14 - Canada, Lands Oil and Gas Administration



Access Routes

Petroleum prospecting companies have used four access routes in moving men and or equipment into the Arctic Islands. These have been:

1. By P.W.A. flights originating out of Edmonton and Yellowknife.
2. Mackenzie River route-barging of equipment down Mackenzie and trans-shipment from Tuktoyaktuk by Northern Transportation Co. operating in the Amundsen Gulf area.
3. Nordair schedules to Resolute from Montreal with expeditors based at Resolute for the trans-shipment of shipments by chartered aircraft to sites on other islands.
4. Department of Transport vessels operating from Montreal and the eastern seaboard.

Examples of some Projected Distances and Costs involved in the production of Crude Oil:

<u>Distances</u>	<u>Godthaab</u>	<u>Montreal</u>	<u>Europe</u>
Cornwallis Island	1,100 miles	1900-2400 ^{HK}	2,600 ^{HK}
Bathurst Island	1,240 "	1900-2400	2,600
Melville Island	1,420 "	1900-2400	2,600

^{HK}Quirin, G.D. 1962, Economics of Oil and Gas Development in Northern Canada, Department of Northern Affairs and National Resources, Ottawa, p.95 and p.99.

^{HK}Depending on season and ice conditions

Distances to Skagway Via Eagle Plains and Dawson

<u>Location</u>	<u>Approximate Distance</u>
Cornwallis Island (Resolute)	1,530 miles
Bathurst Island (Bracebridge Inlet)	1,180 "
Melville Island (Winter Harbour)	1,000 "

Distance to Projected Pipeline System from Prudhoe Bay

<u>Location</u>	<u>Approximate Distance</u>
Winter Harbour to connection on Peel Plateau west of Fort McPherson	810 miles

Estimated Godthaab Prices for 34° Arctic Crude¹

<u>Market</u>	<u>Delivered Price</u>	<u>Tanker Freight</u>	<u>Price F.O.B. Godthaab</u>
U.K. & North Sea Ports	2.38	.14	2.24
U.S. Ports, North of Cape Hatteras	2.44	.14	2.30
Montreal - Summer	2.44	.11	2.33
- Winter	2.44	.13	2.31

P.W.A. has recently received a licence from the Department of Transport for regular scheduled flights to Resolute from Edmonton. This will facilitate the movement of equipment from terminals in western Canada and the centers of the Canadian Petroleum industry.

Petroleum Exploration

In 1959, the Canadian Government issued more than 50 million acres in permits for petroleum exploration in the Arctic Islands. Three wells have been drilled so far in the Arctic Islands. In 1961, Dome Petroleum Associates drilled to 12,548 feet on Melville Island. The Dominion explorers group and United Canso and Associates in 1963-64 drilled to 10,000 feet on Bathurst Island. In the same period, a group headed by Burmah Oil interests drilled to 4,840 feet on Cornwallis Island. All the wells encountered porous sections and on tests recovered large volumes of salt water. A small gas show was recorded in the Dome and Associates' well at Winter Harbour just below the permafrost zone. These poor showings resulted in a decline of interest and a drop in permit holdings.

J.C. Sproule and Associates Ltd., Calgary, has carried out geological studies for 25 different firms during the past eight years. Petropar Canada Ltd. (a company controlled by the French Government) has carried out an extensive seismic program on the Queen Elizabeth Islands beginning in 1966. Petropar, early in 1967 chartered two DC-4 aircraft from Pacific Western Airlines and a Bristol Air Freighter to fly in equipment and supplies from Yellowknife to Resolute on Cornwallis Island. The Bristol then shuttled the equipment from Resolute to Mackenzie King Island.

Included in the airlift were 20 portable camp units from Atco Industries, three portable seismic drilling rigs from contractor Big Indian Drilling, tracked vehicles and a portable geological lab. Two turbine-powered 204 Bell Helicopters chartered from Bullock Wings and Rotors Ltd. were used to move transportable equipment around the island. In 1967, the federal Government agreed to participate in petroleum exploration in the Arctic Islands, with a consortium of 20 investors led by Canadian Pacific Oil and Gas and Cominco Ltd. and headed by Panarctic Oils Ltd. of Calgary. Panarctic holds permits covering 44,137,000 acres farmed out from larger participants and 60 small companies. Petropar turned over 4,000,000 acres of its 14,000,000 acres.

Panarctic permit holdings cover major parts of Melville Island, Bathurst Island, Cornwallis Island, Ellef Rignes and Amund Rignes Island, Somerset

¹Quirin, G.D., 1962, p.99

Island as well as the western part of Devon Island and large areas in the Bauman Fiord and Eureka Sound Areas on Ellesmere Island. Through contributions amounting to 45 per cent of the \$20,000,000 exploration scheme of Panarctic Oils Ltd., the Canadian Government becomes a major shareholder.

Petropar controls major parts of Mackenzie King Island, Borden Island, the southern half of Prince Patrick Island and the western part of Banks Island through extensive acreage permits. At the present time, Canadian oil is marketed in the U.S. and Canada with a total production of 615,200 bbls. in 1967 and a demand of 1,044,000 bbls. Total petroleum production in 1967 amounted to 1,109,000 bbls. with the N.W.T. contributing 2,200 bbls. to the total amount. Authorities in the petroleum industry have forecast the same production in 1968. The cumulative footage forecast in 1968 for the N.W.T. is 83,605 feet.

At the present time, emphasis is on exploration and development of potential petroleum fields rather than production from proven finds. The recent discovery of oil in northern Alaska (Prudhoe Bay) has cast a shadow on northern petroleum developments since this may result in a decreased demand for Canadian petroleum. Development of the discoveries in northern Alaska poses problems in transportation and marketing. A 3,300-mile pipeline would put the oil into the U.S. interior market where a petroleum deficiency has been forecast and bring about increased incentive for the development of prospective oil-bearing country between the Alberta-Northwest Territories border and the Mackenzie Delta.

The development of a pipeline would be an incentive to the development of a continental oil policy by the United States and Canada. This would permit North American petroleum resources to be utilized in the most economic way and the problems of international boundary reduced in terms of marketing Canadian oil. The development of a Prudhoe Bay pipeline offers interesting potentials for the Queen Elizabeth Archipelago in so far as oil could be routed by pipeline from Melville Island across Banks Island and Amundsen Gulf to the Mackenzie Delta.

Position of Resolute in Terms of Future Petroleum Developments in the Queen Elizabeth Islands

It is difficult to project the position of Resolute in respect to future developments in the Queen Elizabeth Islands. The present operation is functional in terms of joint weather stations located in the Islands. Resolute occupies a favoured position due to its accessibility by sea and air. The development of producing oil fields does not necessarily involve the development of major population centres due to rapid advances in technology and the projected export of oil in crude form by pipeline. Resolute should continue to occupy a favoured position in the development of the high Arctic.

Petroleum Industry in Terms of Eskimo Employment

Petroleum exploration and the development of a petroleum industry in the Queen Elizabeth Islands offers limited potentials for Eskimo employment.

TABLE 10 - Acreage under Permit,
Canada Lands, December 31, 1965

Permits	Number	Acreage
N.W.T. Mainland	1,266	59,419,535
Yukon Mainland	314	14,328,858
Arctic Islands	1,127	51,738,025
Water-Arctic Coast	194	9,221,639
TOTAL FOR PERMITS	2,901	134,708,057
Leases	Number	Acreage
N.W.T. Mainland	104	675,214
Yukon Mainland	9	32,933
Arctic Islands	Nil	Nil
Water-Arctic Coast	Nil	Nil
TOTAL FOR LEASES	113	708,147
TOTAL		135,416,204

TABLE 11 - Acreage under Permit,
Canada Lands, December 31, 1966

Permits	Number	Acreage
N.W.T. Mainland	2,018	95,898,807
Yukon Mainland	309	14,575,623
Arctic Islands	1,434	65,272,723
Water-Arctic Coast	199	9,625,591
TOTAL FOR PERMITS	3,960	185,372,744
Leases	Number	Acreage
N.W.T. Mainland	151	882,481
Yukon Mainland	17	75,359
Arctic Islands	Nil	Nil
Water-Arctic Coast	Nil	Nil
TOTAL FOR LEASES	168	957,840

Six Eskimos are presently training in Alberta for employment on drilling crews with Panarctic. It is interesting to note that only 11 local residents are employed at Norman Wells despite the operation of a refinery since World War II. If and when a pipeline is constructed for the export of crude oil Eskimos may secure employment in the construction phase. The development of mining offers a more concrete potential for Eskimo employment in the construction and operation of a mine property where general and semi-skilled labour can be employed in large numbers.

Six Eskimo men have been recruited from Arctic Bay and Pond Inlet for training as part of well drilling crews of Panarctic programs. The men will be trained in Alberta before taking part in the petroleum exploration program in February 1969 in the Queen Elizabeth Islands.

Lead and Zinc Deposits Cornwallis and Little Cornwallis Islands

While major emphasis has been placed on petroleum exploration, mineral exploration has also been carried out in the Arctic Archipelago. An interesting lead-zinc mineralization float was discovered by petroleum prospectors on Little Cornwallis Island. In 1960 Bankeno Mines Ltd. found an additional galena and sphalerite mineralization. In 1965 Cominco Ltd. combined with Bankeno Mines and carried out a large scale exploration program on Cornwallis and Little Cornwallis Islands. The program consisted of geophysical, geological and geochemical surveys. Two helicopters and fixed wing aircraft were used in carrying out the programs. A diamond drilling program was carried out and low grade ores were intersected.

As a result of the program an estimated reserve of 900,000 tons of lead and zinc (13 per cent zinc, 2 per cent lead) was located on Cornwallis and Little Cornwallis. Bornite copper was found in a number of locations. Cominco has continued its exploratory program and extended it to Devon Island.

Coal

Coal occurs in the Intrepid Bay formation in southwestern Cornwallis Island. At least twelve sub-bituminous coal seams ranging in thickness from a few inches to five feet, occur interbedded with clay and sand. No coal seams more than two inches thick were observed in the outcrops of this formation on Rookery Creek.

Specimens - Calorific value

	<u>At capacity moisture</u>	<u>As received</u>	<u>Dry</u>
B.T.U./gross	7,950	10,033	10,785
Bank A.S.T.M. - Sub-bituminous C			
Moisture mineral matter free B.T.U.	8,367.		

There have been no attempts by Eskimos to utilize this resource as a fuel source. Experiments are unlikely to occur due to the introduction of low-rental housing and the provision of fuel oil.

Gypsum

Some beds and lenses of gypsum occur in Silurian, Cambrian and apparently Proterozoic strata in small amounts and they appear to be somewhat more voluminous in Devonian strata. The mineral, more or less pure, occurs in layered sequences possibly as thick as 1,000 feet in Middle Ordovician formations ranging from northern Baffin Island to the mid-latitude of Ellesmere Island and from Cornwallis Island to mid-longitude of Devon Island.¹

¹Stockwell, C.H., 1963, p.439

TABLE 12 - Synopsis of Coal Occurrences in the Arctic Archipelago

Age	Extent	Thickness	Rank (A.S.T.M.)	Distribution by Islands	
				+ Age known	- Age uncertain
Tertiary and Upper Cretaceous	Widespread and common	Up to 30 feet	Sub-bituminous C (1 analysis)	+ Axel Heiberg - Baffin - Banks	- Bathurst - Devon + Ellesmere
Lower Cretaceous and/or Upper Jurassic	Widespread	Up to 5 feet	Lignite to sub-bituminous	+ Amund Ringnes + Axel Heiberg	- Baffin - Bylot + Ellef Ringnes + Prince Patrick
Jurassic	Few known	Up to 3 feet	Sub-bituminous b (1 analysis)	- Cornwallis + Prince Patrick	
Upper Triassic and/or Lower Jurassic	Widespread	Apparently thin		+ Axel Heiberg - Cameron	+ Cornwallis + Ellesmere
Pennsylvanian	12 occurrences	Up to 5 feet	Sub-bituminous C (1 analysis)	+ Cornwallis	
Permo-Carboniferous or earlier	1 occurrence			+ Axel Heiberg	
Upper Devonian	Widespread	Probably less than 3 feet	High volatile bituminous B (2 analyses)	- Banks + Bathurst - Byam Martin	+ Cameron + Devon + Ellesmere + Melville + Prince Patrick - Victoria

Source: Geology and Economic Minerals of Canada, 1963, p.440.

Part II - The Base

Pre-contemporary Period

The history of exploration and whaling activities has been well documented in works by a number of authors.¹ With a few exceptions, explorers and whalers did not encounter Eskimos in the Lancaster Sound and Barrow Strait areas. The Eskimos which they did meet appeared to have been transients rather than resident groups.² A. H. Macpherson (1959 p.14) stated:

"The past scarcity of Eskimos in the islands of the high Arctic may be ascribed to the general barrenness of the land and sea and consequent comparatively low densities of game animals. Other disadvantages are the prevalence of rough ice, the shortness of the open-water season and the lengthy period of darkness. The area is thus an unattractive one to Eskimo hunters."

In September 1880, the Arctic Islands were transferred from Britain to Canada.

R.C.M.P. Detachments

R.C.M.P. detachments were established on the Arctic Islands in the 1920s as a symbol of Canadian sovereignty as well as being custom houses and post offices. Detachments were set up at Dundas Harbour in 1924, Craig Harbour in 1922 and Bache Peninsula in 1926. No Eskimo populations were then known but Thule and Smith Sound Eskimos made bear and muskoxen hunting expeditions and north Baffin Eskimos made forays to Bathurst, Cornwallis and Devon Islands on similar expeditions.

A Hudson's Bay Company fur-trading post was in existence at Dundas Harbour from 1934 to 1936. Eskimo families were moved from Cape Dorset, Pangnirtung and Pond Inlet, but were moved to Arctic Bay in Admiralty Inlet when the post closed in 1936. The Eskimos had little desire to stay in a hostile land where ice conditions were difficult for hunting sea mammals and the winter period of darkness was long.

During the initial establishment of R.C.M.P. posts, Greenland Eskimos were recruited to serve as guides and hunters. These were soon replaced with Eskimos from Baffin Island. The majority were recruited from Pond Inlet. Each detachment had at least one Eskimo family in addition to the normal staffing of two officers. Radio communications were maintained with the outside world and an annual sea-lift was carried out by the Eastern Arctic Patrol.

¹For readers who wish to obtain a detailed survey of exploration in the high Arctic, A. Taylor's work, Geographical Discovery and Exploration in the Queen Elizabeth Islands is highly recommended.

²McLintock (1859) saw three families (12 people) on Philpots Island at the eastern end of Devon Island July 1858 but these had crossed Lancaster Sound two years previously.

Population of the Queen Elizabeth Islands 1966

The small population of the Queen Elizabeth Islands is centered on weather stations in the Archipelago with the exception of Grise Fiord, a government sponsored settlement of Eskimos immigrants from other areas. The small Eskimo community at Resolute is, in many respects, an integral part of the D.O.T. operated weather station and airstrip complex.

During the summer, the population is increased by an influx of transient petroleum exploration parties, geologists and other research groups as well as maintenance crews for the joint weather stations. The summer transient population withdraws with the advent of winter conditions.

Population Figures for High Arctic Settlements, October 14, 1966

<u>Settlement</u>	<u>White</u>	<u>Eskimos</u>	<u>Total</u>
Alert	35	-	35
Eureka	12	-	12
Grise Fiord	5	87	92
Isachsen	12	-	12
Mould Bay	12	-	12
Resolute	90	128	218
TOTAL	166	215	381

The Establishment of Weather Stations in the Arctic Archipelago

Early weather records for the Arctic Archipelago were collected following the establishment of R.C.M.P. detachments at Craig Harbour, Bache Peninsula and Dundas Harbour. Other meteorological observations were collected at Fort Ross and Arctic Bay by Hundson's Bay Company employees.

In 1947-50 five weather stations were established as a joint project by Canada and the United States to permit an extension of the period of reliability of weather forecasts. This was of special importance to Canada and the United States since their weather is dominated to a large extent by outbreaks of Arctic air. The project was to emphasize regular weather observation and an investigation of Arctic meteorological problems.

<u>Station</u>	<u>Island</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Elevation (ft.)</u>
Alert	Ellesmere	82° 30' 06"	62° 19' 47"	217
Eureka	Ellesmere	80° 00' 00"	85° 56' 25"	8
Isachsen	Ellef Ringnes	78° 47' 16"	103° 31' 54"	102
Mould Bay	Prince Patrick	76° 16' 32"	119° 27' 53"	50
Resolute	Cornwallis	74° 41' 03"	94° 54' 17"	56

Under the agreement the Canadian Government undertook the re-supply of the joint Arctic weather stations, a task which requires airlifting of supplies to stations where ice conditions do not normally permit shipping. All these weather stations are jointly manned by Canadian and American personnel.

Early explorers' records provide valuable information, but are qualified by short duration and a number of other factors. The United States briefly maintained a weather station at Fort Conger on Ellesmere Island as a result of the First International Polar year 1882-83.

Resolute, N.W.T.

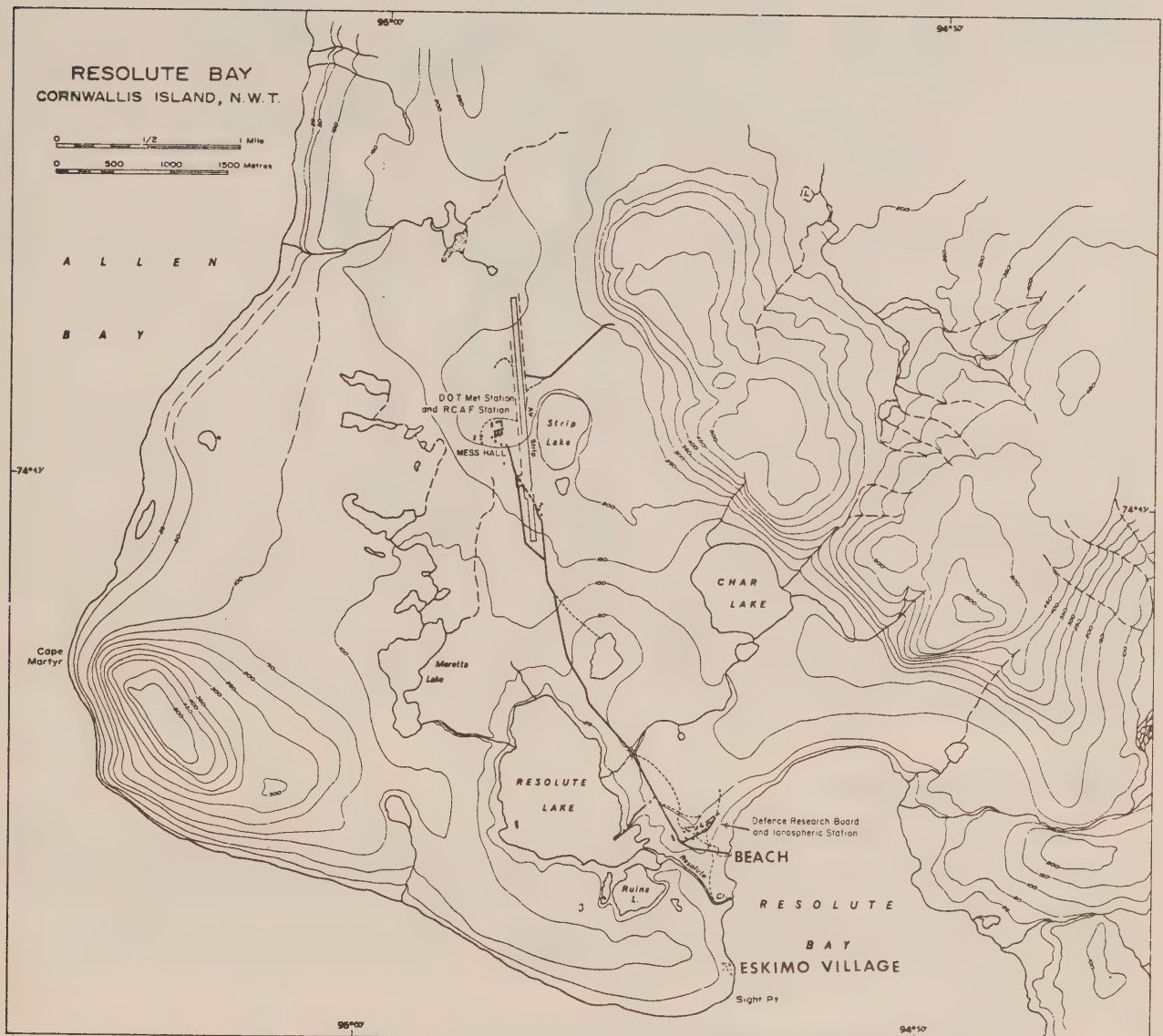
The establishment of a main weather station in the central part of the Arctic Archipelago was planned for the summer of 1947 following a preliminary reconnaissance in 1946 which indicated that Winter Harbour on Melville Island would be a satisfactory site. Ice conditions proved to be unsatisfactory beyond Griffith Island at 108° W. Longitude for the United States icebreaker U.S.S. "Edisto" followed by a cargo ship. Following a second reconnaissance beginning August 15 from Dundas Harbour, the "Edisto" again encountered heavy ice and received damage to its propellers. Surveys were carried out on the south shores of Bathurst and Cornwallis Islands, and in the Radstock Bay area to choose a suitable alternate site.

Resolute was chosen as an alternative site to Winter Harbour for the following reasons:

1. It offered the best possibility for airstrip construction and representative weather observations.
2. Resolute had a more westerly situation as compared to Devon Island and was more central to the Archipelago.
3. It was believed to be readily accessible by cargo ship even in a difficult ice year.

Approval for the new site was given by Canadian and United States Government agencies. Unloading of equipment and supplies began on August 31, 1947. The station site was located one quarter of a mile from the beach. A freshwater lake was available 1,500 feet to the west, and a suitable airstrip was located 2½ miles inland.

Figure 15 - Resolute Bay, Cornwallis Island



In 1949 the Royal Canadian Air Force Transport Command established a base at Resolute, and the airstrip was operated by it for a number of years. Control and management of all facilities, and the airstrip, at Resolute, were transferred to Air Services, Civil Aviation Branch, Department of Transport, on April 1, 1964. The Winnipeg office of this branch is directly responsible for its administration. During the years since its construction, Resolute has served, as a central shipping and transfer point for the re-supply of the satellite J.A.W.S., and has increasingly served as a base for air operations in connection with scientific expeditions.

Resolute

Resolute consists of the following:

- (a) A main accommodation and airstrip complex. This is also the location of the communications center and transient accommodation.
- (b) South Camp located just north of the beach area, Ionosphere program site.
- (c) Beach Area and P.O.L. Depot.
- (d) Eskimo community, school, co-operative store.

Gravel roads connect the various facilities. These are kept open by bulldozer during the winter.

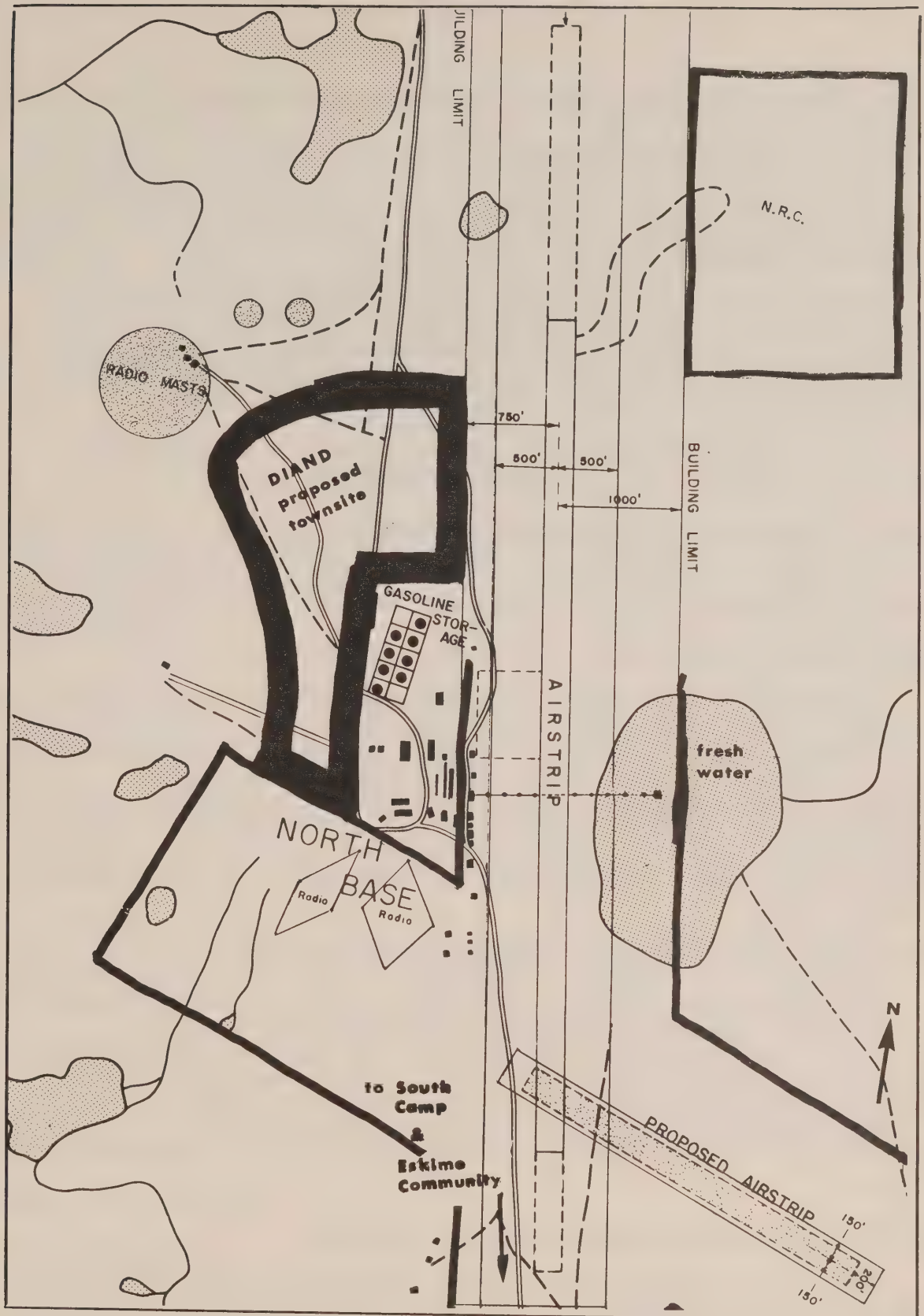
The main accommodation and airstrip complex is the center of the total operations. A single main unit houses the accommodation, dining, kitchen, dispensary, bar and theater facilities. There are two maintenance and garage buildings and three major warehouses. The Terminal and telecommunication facilities are housed in one building. Water is piped from Strip Lake located directly across the airstrip to the northeast of the building complex. A powerhouse is located on the southeast corner of the complex.

Meteorological Branch

The Meteorological Branch is responsible for the scientific observational program at Resolute, while Air Services Central Region has the responsibility for the operation of the station as a whole. The personnel employed by the Meteorological Branch for the purpose of surface-weather observations, upper air soundings, ozonesonde observations, and numerous other scientific observations are as follows:

- (a) An Officer-in-Charge - Meteorological officer or meteorologist at a salary ranging from \$8,500 to \$12,000.
- (b) Five meteorological technicians - (one of these designated at senior technician) at salaries ranging from \$5,300 to \$7,100.

Figure 16 - Airstrip Base, Resolute



In addition, the United States Weather Bureau employs:

- (a) An executive officer
- (b) An electronics technician
- (c) Two meteorological technicians

The basic work week is 40 hours, with overtime normally amounting to 14 hours per week. An isolation allowance of \$1,080 per annum is paid at Resolute. The officer-in-charge receives an additional allowance of \$1,200 per annum. All Canadian employees pay \$75.00 a month for board and lodging, and N.W.T. Hospital insurance of \$1.00 per month.

Similar employment conditions exist in regard to communications facilities operated by the Department of Transport.

Other Agencies Engaged in Functional or Research Programs:

Department of Transport Radio Station, 16; Ionospheric Station, 5; Dominion Observatory, 1; Defence Research Board, 1.

Meteorological Program

Eight daily synoptic observations are taken at three hourly intervals at Resolute. The same applies to other joint Arctic weather stations (Mould Bay, Isachsen, Eureka and Alert). Records are kept in duplicate and copies are forwarded to the United States Weather Bureau in Washington. Upper-air observations are recorded by two pilot balloon observations made daily whenever weather conditions permit. Radiosonde and rawinsonde observations consisting of observation, rapid transmission and accumulation of upper-air data constitute one of the most important functions of the joint Arctic weather stations.

Special Scientific Projects by Weather Station Personnel

The following projects are carried out by weather station personnel: low level air temperature measurement recordings; soil temperature measurement recordings; tidal observations; ice thickness measurements. Seismological investigations are carried out by a seismologist from the Dominion Observatory. Resolute provides a strategic center for ice reconnaissance patrols carried out by air to provide information on general ice conditions and ice conditions of importance to Arctic navigation and shipping.

Contract for Maintenance of Facilities - Resolute

The contract for maintenance of base facilities and the airstrip is currently held by Tower Co.Ltd. with head offices in Montreal. A large work force is required for operation and maintenance programs. The work force exceeds the number of D.O.T. personnel employed in weather observations and the communication system. Men are recruited on a contract basis for twelve-month periods with 10 per cent bonuses for completion of contracts

and a 4 per cent vacation pay.

The weather station and communication personnel are hired under federal civil service recruitment programs. They receive an isolation allowance in addition to regular salaries. Life at the base is comfortable with excellent food, accommodation and various forms of recreation (bingo, bar and movies). Mail is received three times weekly by scheduled aircraft. There are no facilities for married personnel on base.

TABLE 13 - Employment, Tower Company, Resolute

Classification	Estimated bi-weekly rate	Rate Range	Estimated Wages 1966-67
Project Manager	\$646.15	1250-1700	\$16,800.00
Administrative Superintendent	507.69	1000-1250	13,200.00
Foreman, Structures and Grounds	484.61	950-1150	12,600.00
Foreman, Utilities	484.61	950-1150	12,600.00
Foreman, Garage	461.54	900-1050	12,000.00
Foreman, Trades (as required)	415.38	900-1050	3,600.00
Fire Marshall	\$392.31	750-950	\$10,200.00
Registered Nurse/Accommodations	\$392.31	750-950	\$10,200.00
Utilities: (Foreman 3.4.2 and 11 men)			
Power Generation (4)			
Mechanic Diesel Electric	\$415.38	800-1000	\$10,800.00
Mechanic Diesel Electric	415.38	800-1000	10,800.00
Operator Powerhouse	323.08	600-800	8,400.00
Operator Powerhouse	323.08	600-800	8,400.00
Electrical (3)			
Electrician	\$415.38	800-1025	\$10,800.00
Electrician	415.38	800-1025	10,800.00
Electrician Linesman	415.38	800-1000	10,800.00
Plumbing and Heating (4)			
Plumber Steamfitter	\$415.38	800-1025	\$10,800.00
Plumber Steamfitter	415.38	800-1025	10,800.00
Mechanic H.V.R.	392.31	750-950	10,200.00
Mechanic H.V.R.	392.31	750-950	10,200.00

(Continued)

TABLE 13 (continued)

Classification	Estimated bi-weekly rate	Rate Range	Estimated Wages 1966-67
Garage: Foreman 3.4.3. and (5)			
Mechanic Diesel Gas	\$415.38	800-1000	\$10,800.00
Mechanic Diesel Gas	415.38	800-1000	10,800.00
Mechanic Operator	369.23	700-900	9,600.00
Mechanic Operator	369.23	700-900	9,600.00
Mechanic Helper (Eskimo)	253.85	450-650	6,600.00
Structures and Grounds (Foreman 3.4.1 and 12)			
Mechanic Operator (Lead)	\$369.23	700-900	\$9,600.00
Mechanic Operator	369.23	700-900	9,600.00
Equipment Operator	323.08	600-800	8,400.00
Equipment Operator	323.08	600-800	8,400.00
Equipment Operator (Eskimo)	276.92	500-700	7,200.00
Maintenance Craftsman Carpenter	380.77	750-950	9,900.00
Maintenance Craftsman Carpenter	380.77	750-950	9,900.00
Maintenance Craftsman Painter	380.77	750-950	9,900.00
General Help Labourer	253.85	450-650	6,600.00
General Help Labourer	253.85	450-650	6,600.00
General Help Labourer (Eskimo)	253.85	450-650	6,600.00
General Help Labourer (Eskimo)	253.85	450-650	6,600.00
Accounting and Clerical (4)			
Project Accountant	\$415.38	850-1050	\$12,000.00
Accounts Clerk	300.00	550-750	7,800.00
Clerk Stenographer	323.08	600-800	8,400.00
Clerk Maintenance	300.00	550-750	7,800.00
Stores - (3) Contract (1) Seasonal			
Senior Storeman	\$369.23	700-925	\$9,600.00
Junior Storeman	300.00	550-750	7,800.00
Inventory Storeman	300.00	550-750	7,800.00
Sealift Co-ordinator (Seasonal)	323.08	600-800	2,800.00
Culinary: (8)			
Chef	\$369.23	725-925	\$11,000.00
Baker	288.46	525-725	7,500.00
Cook	288.46	525-725	7,500.00

(Continued)

TABLE 13 (continued)

Classification	Estimated bi-weekly rate	Rate Range	Estimated Wages 1966-67
Culinary: (8)			
Cook	\$288.46	525-725	\$7,500.00
Cook	288.46	525-725	7,500.00
General Help, Kitchen	253.85	450-650	6,600.00
General Help, Kitchen (Eskimo)	253.85	450-650	6,600.00
General Help, Dining room	253.85	450-650	6,600.00
Janitorial Services (4)			
Janitor	\$253.85	450-650	6,600.00
Janitor	253.85	450-650	6,600.00
Janitor (Eskimo)	253.85	450-650	6,600.00
Janitor (South Camp, Part-Time)	253.85	450-650	6,600.00
Miscellaneous (1)			
Fire Watchman	\$300.00	550-750	7,800.00

Imperial Oil

An Imperial Oil Agency was established in Resolute in 1965. Normally one man is employed at Resolute handling P.O.L. deliveries to other agencies in the community. In 1967, there were two non-Eskimos working in this capacity.

Atlas Aviation

Atlas Aviation is essentially a small scale but rapidly expanding operation. The following employment was tabled in 1967.

- 2 full-time pilots (including owner and operator)
- 1 part-time pilot
- 1 mechanic
- 1 Eskimo general helper (part-time)
- 1 Bookkeeper and expeditor.

In 1968, two additional pilots were hired to meet the increased amount of flying required for the 1968 season.

Sproule Associates

Sproule Associates have a staff house and warehousing at Resolute. Staff varies according to the program. An expeditor and cook are stationed at Resolute during the summer months. The number of personnel on base varies according to the research program.

Continental Polar Shelf

Resolute provides a central location for Polar Continental Shelf programs initiated in 1961. This is primarily a seasonal operation. Eskimos have been employed on a seasonal employment basis. This consists of 1-2 individuals hired as labourers in moving freight etc. for varied periods up to a few weeks.

R.C.M.P.

An R.C.M.P. constable is based at Resolute. In addition to the normal duties of law enforcement, the R.C.M.P. constable maintains radio communication with other R.C.M.P. detachments in the high Arctic. He assists the male nurse at the base in matters of Eskimo health and is responsible for Eskimo transients travelling south as Northern Health Service patients.

Transient Accommodation - D.O.T. Airbase - Resolute

Transient accommodation at the D.O.T. airbase at Resolute ranges from dormitory to shared accommodation and single rooms. Transient accommodation is not readily available for female transients. Peak transient accommodation consists of space for 80 transients although this has been extended to space for as many as 150 persons on a temporary basis. A flat rate of \$4.00 per night is charged regardless of type of accommodation. As yet, there is limited accommodation for married people travelling to Resolute. They are usually housed in V.I.P. quarters for short periods.

Messing facilities are also available. A system of meal tickets has been instituted and there is a charge of \$4.00 for each meal. A bar and lounge are open to transients who purchase a weekly or monthly membership in the Arctic Circle Club. Overall charge for transient accommodation and meals is scheduled to rise from \$16.00 to \$25.00 per day in the near future. Accommodation must be arranged two weeks in advance by writing to Superintendent of Airports, D.O.T. Winnipeg or to the Airport Manager, D.O.T. Resolute, N.W.T.

Equipment Rental Rates

The following is a listing of types of equipment available at the Resolute base including the appropriate rental charges.

TABLE 14 - Equipment Rental Rates, Resolute Bay, June 1967

Equipment Type	Hourly	Daily	Weekly	Monthly
Cement Mixer	\$14.00	\$84.00	\$336.	\$1,008.
Cement Mixer Tilter $\frac{1}{2}$ C.Y.	3.00	18.00	72.	216.
Compressor, Air 125 CFM (Trailer)	8.00	48.00	192.	576.
Crane, 20-ton Mobile	80.00	480.00	1,920.	5,760.

(Continued)

TABLE 14 - (continued)

Equipment Type	Hourly (dollars)	Daily (dollars)	Weekly (dollars)	Monthly (dollars)
Bulldozer T.D. 15	14.00	84.00	336.	1,008.
Forklift	14.00	84.00	336.	1,008.
Ground Power Unit - Starting Herman Nelson Heater (not including fuel)	14.00	84.00	336.	1,008.
Truck, Pick-up $\frac{1}{2}$ ton	1.00	6.00	24.	72.
Truck, Stake three ton	9.00	54.00	216.	648.
Truck, Dump 5 C.Y.	9.00	54.00	216.	648.
Truck, Pick-up $\frac{1}{2}$ ton	6.00	36.00	144.	432.
Front end Loader, Trojan	14.00	84.00	336.	1,008.
Snowmobile	6.00	36.00	144.	432.

All machines are rented at a basic rate as shown above. With operator supplied with any above unit the charge for labour is \$6.00 per hour, (\$7.00 in 1968). Rental of a Herman Nelson Heater does not include the cost of fuel; this would be the responsibility of the lessee.

Imperial Oil

In 1965, Imperial Oil took over from D.O.T. in respect to the supply and handling of petroleum products. The following prices (1968) are currently charged for petroleum products at Resolute, N.W.T.

TABLE 15 - Petroleum Products

Petroleum Products	Bulk	Drummed
Turbo 2 (J.P.4)	49.7 cents per gallon	67.6 cents per gallon
Automotive	51.2 " " "	56.2 " " "
Aviation 100-150	60.3 " " "	78.3 " " "
Aviation 115-145	62.0 " " "	80.0 " " "
Diesel and heating	48.8 " " "	64.8 " " "
Lubricating oil		170.0 " " "

Petroleum products are received by tanker in August and offloaded into six bulk tanks at the beach area or as drummed products. Each bulk tank holds 215,000 gallons. Two tanks hold diesel, two are for turbo and two are for aviation gas. Automotive gas is pumped up to two tank units at the base. Two pumping stations bring diesel and other petroleum products by pipeline to the base from the beach-head. In the spring of 1968, the demand for aviation fuel from chartered aircraft landing in Resolute threatened to tax the available supply and a rationing system was instituted pending the arrival of the sea-lift.

Communications

Resolute is a major communications center in the Queen Elizabeth Islands. It provides a vital link with the joint weather stations and southern Canada.

Point-to-point communications are carried out as follows:

Circuit 738 for Meteorological traffic with Isachsen, Mould Bay, Eureka, Alert, Sachs Harbour and Thule on a scheduled basis. Administrative and commercial traffic is also handled. The main operation is by Single Side Band HF Radiotelephony supplemented by LF Radiotelegraphy.

During the navigation season, ship-shore communications are provided on HF radiotelegraph and HF/MF radiotelephone. Meteorological information is transmitted to ships by facsimile. Message traffic is accepted by Resolute Aeradio Station from private individuals, companies, etc. for transmission over D.O.T. circuitry at approved rates and transferred to commercial facilities at Churchill D.O.T. Air services, marine services operational, and administrative messages are accepted for delivery via air-operational teletype circuits. Messages for other government departments and agencies are accepted and handled free of charge over D.O.T. northern circuitry and transferred to commercial facilities at specified southern locations, generally Churchill.

VHF air-ground communications on 126.9 Mc/s, in support of the proposed Goose Upper Information Region, are operating at Alert and Mould Bay. Rearward communications are over existing circuitry through Resolute. Reliability of point-to-point high-frequency communications between Resolute and satellite stations has been improved by the installation of higher efficiency antenna systems. Manual HF CW circuit with Coral Harbour for relay of commercial traffic is available via wireline facilities at Churchill.

HF radiotelephone circuit 745 for commercial and administrative traffic with Pond Inlet, Grise Fiord, Arctic Bay, as well as private commercial stations established by field parties. Service is on a scheduled cross-band basis. Single side band high-frequency radiotelephone circuit 733 for continuous commercial message and telephone service with private commercial stations established by oil exploration parties, etc.

Duplex radioteletype circuit 724 with Cambridge Bay for air-operational and administrative traffic. Cambridge relays by tape to teletype circuit 30363 terminated at Edmonton. Duplex radioteletype circuit 724A with Cambridge Bay for meteorological traffic. Cambridge relays by tape to meteorological teletype circuit 140 (lateral main DEWline stations) terminated at Edmonton and Goose Bay. Resolute Aeradio Station provides service on appropriate high-frequency air-ground communications channels for Domestic, International and Military flights. Two D.O.T. aeronautical non-directional beacons provide a limited airport tower service.

Radio Frequencies and Call Signs

<u>R.C.M.P. Resolute</u>	<u>R.C.M.P. Grise Fiord</u>	<u>D.O.T. Resolute</u>
4783.5 x JE 441	4783.5 x JE 78	1139.1 x VFR 4
47865 " "	4786.5 " "	2868 " "
7778.5 " "	4837 " "	2987 " "

(Continued)

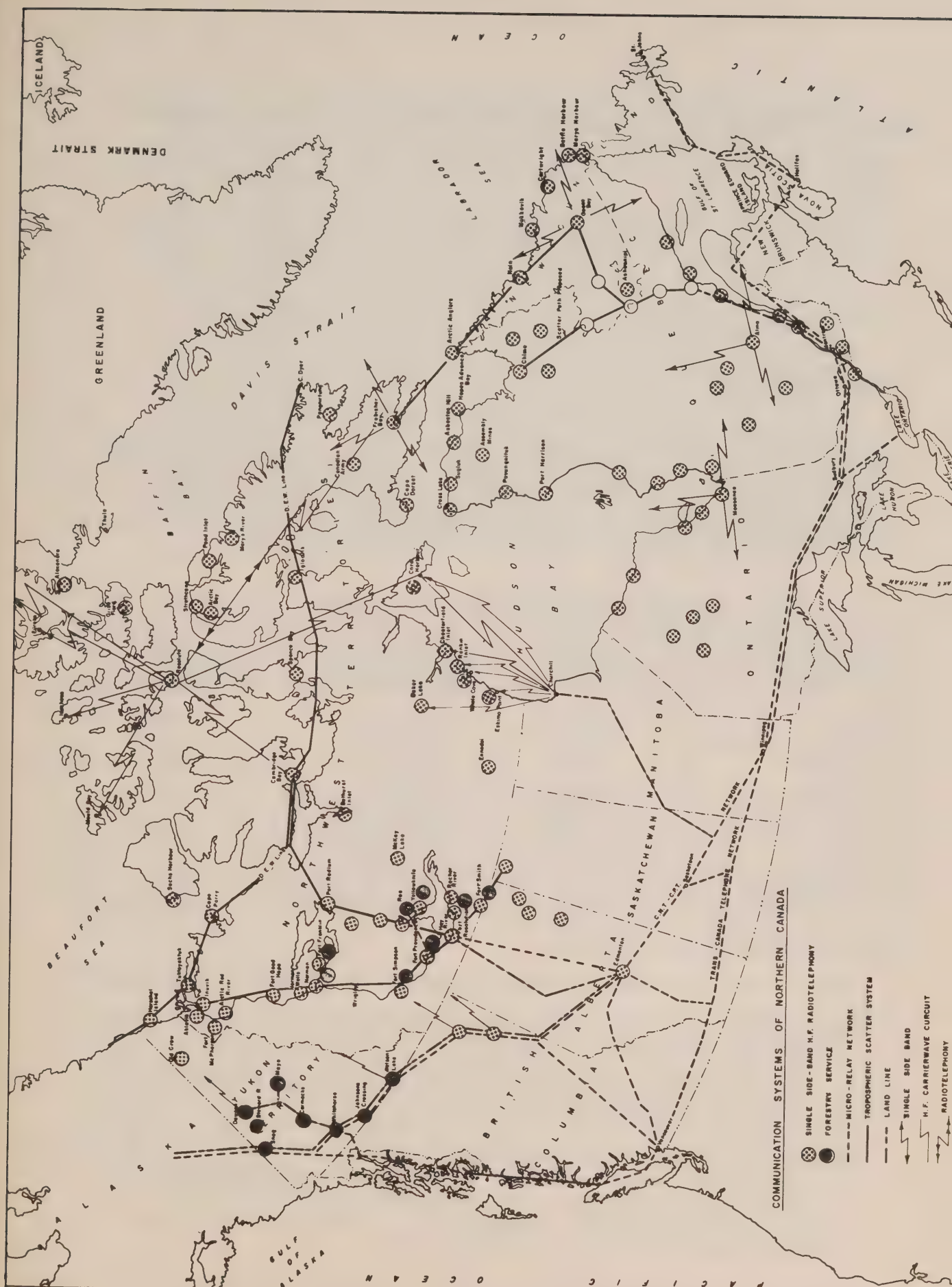


Figure 17 - Communications Systems of Northern Canada

R.C.M.P. Resolute

7781.5 x JE 441
9103.5 " "
9106.5 " "

R.C.M.P. Grise Fiord

5681.5 x JE 78
7778.5 " "
7781.5 " "
9103.5 " "
9106.5 " "

D.O.T. Resolute

4520 x VFR 4
4603 " "
5772.5 " "
5774 " "
6774.5 " "
6885 " "
7561.5 " "
9140 " "
9367 " "

Transportation

The following is a preliminary survey of transportation facilities. Air transportation is becoming increasingly important in the Queen Elizabeth Islands in terms of all phases of development. Water transportation consists of annual sea-lift and icebreaker patrols. The role of water transportation may be dramatically altered by developments of a new icebreaking device embodied in Alexbow design. A number of experts have speculated on potential utilization of the northwest passage as a world shipping lane.

TABLE 16 - Air Distances from Resolute

Destination from Resolute	Distance Statute Miles	Destination from Resolute	Distance Statute Miles
Ottawa	2,123	Pond Inlet	360
Edmonton (Alberta)	1,560	Arctic Bay	225
Yellowknife	935	Grise Fiord	240
Mould Bay	431	Igloolik	450
Isachsen	311	Hall Beach	492
Eureka	381	Frobisher Bay	945
Alert	670	Cambridge Bay	430
Thule (Greenland)	455	Churchill	1,065
Winter Harbour	291	Point Barrow	1,190

Airstrips and Landing Facilities

The following is a brief resumé of airstrips in the Arctic Archipelago.

Resolute, N.W.T. - 6,500 x 200 feet heading 167° - 347° true, elevation 220 feet surface fairly smooth, high intensity approach lights, no GCA. Parking lot, airstrip garage, fueling facilities located on west side of runway. Two aeronautical non-directional beacons are operated by the D.O.T.

Alert, N.W.T. - 5,500 x 200 feet heading 048° - 228° true, elevation 95 feet surface fairly smooth, lighted, parking lot approximately 200 x 300 feet, located at the southwest end on the northwest side, airstrip shack off the southwest end. Airstrip garage located at the southwest end on the southeast side.

Eureka, N.W.T. - 5,200 x 175 feet heading 108° - 288° true, elevation 256 feet surface fairly smooth, parking lot approximately 200 x 300 feet located at the west end on the north side, airstrip shack located west end on the south side.

Isachsen, N.W.T. - 4,300 x 175 feet heading 046° - 226° true, elevation 175 feet main parking lot approximately 200 x 300 feet located on the southeast side about 1,000 feet from the southwest end, airstrip shack located adjacent to the main parking lot. An additional parking lot, 200 x 300 feet for bulk fuel discharge only is located on the southeast side of the airstrip about 2,000 feet from the southwest end. Culverts for drainage of the gully at the north-east end of the strip are in place on site, and filling of this gully commenced in 1962. Completion of this work will permit extension of the airstrip to 5,000 feet or more.

Mould Bay, N.W.T. - 5,400 x 200 feet heading 092° - 272° true, elevation 19 feet smooth, parking lot approximately 200 x 300 feet located near the west end on the south side, airstrip shack adjacent to the parking lot. An auxiliary parking lot for discharge of bulk fuel oil only is located on the north side of the airstrip near the west end.

In winter visual landings may be made on Resolute Lake, a former arm of Resolute Bay, 15 feet in elevation. Ice is sufficiently thick on Resolute Lake by mid-October to permit landings by small aircraft. This freshwater lake is not susceptible to wind or the extreme pressure exerted over the sea-ice. When drifting snow covers the regular airstrip the lake can be used in winter also.

The Resolute Airstrip

The airstrip at Resolute has certain disadvantages under conditions of reduced visibility and local topography. Aircraft activity is subject to frequent curtailments due to conditions of snow, rain, fog and low stratus clouds. The airstrip runs across prevailing wind directions. Current plans include construction of a new airstrip to the southeast of the main station complex to provide better approaches in terms of crosswinds and local topography.

Scheduled Air Services

Nordair Ltd. operates a scheduled service to Resolute from Montreal and a charter service from Resolute to stations in the Queen Elizabeth Islands.

Intermediate stops are: Fort Chimo, Frobisher Bay and Hall Beach. This service has been, and is, of vital importance to government agencies involved in programs in the eastern Arctic. It also provides ready access to the Queen Elizabeth Islands in terms of scientific research and geological and petroleum exploration.

Atlas Aviation Ltd.

Atlas Aviation Ltd. with small aircraft based at Resolute has pioneered in the establishment of both charter and scheduled services in the high Arctic. In 1967, a monthly scheduled service was instituted to Pond Inlet, Arctic Bay, Grise Fiord, Mould Bay, and Isachsen. This service has broken the extreme isolation of the settlements particularly during the long winter.

Pacific Western Airlines

In September, 1968, Pacific Western Airlines was granted a licence by the Department of Transport for the operation of a scheduled air service from Edmonton, Alberta. This will provide an important link from western Canada and increase the strategic position of Resolute.

Nordair Flight Schedules

Nordair is authorized to serve Resolute under ATB licence 987/59 (NS) which also names Montreal, Roberval (suspended), Cape Dyer, Hall Beach, Asbestos Hill and Deception Bay.

The following is a listing Nordair flight schedules between Montreal and Resolute:

Flight Schedule Northward Bound

Departure time	Tuesday	Friday
Aircraft type	1049 H	D.C.4 ^M
Departure time	2359 Local time	2300
Arrival time	0715 Wed.	1300 Sat.

^MVia Frobisher Bay and Hall Beach

Flight Schedule Southward Bound

Departure day	Wednesday	Saturday
Aircraft type	1049H	D.C.4 ^M
Departure time	09 15 Local time	1600
Arrival time	2015	0630

^MVia Hall Beach Bay and Frobisher Bay

Nordair Passenger and Express Rates

Routes	One Way	Return	Express per lb.
Montreal to Frobisher Bay	\$125.00	\$250.00	66.5¢
Montreal to Hall Beach	135.00	270.00	80¢
Montreal to Resolute	185.00	370.00	124¢
Frobisher to Resolute	135.00	270.00	94¢

Freight Rates (lb. basic)

Routes	under 1,000 lbs.	1,000 lbs. but less than 5,000 lbs.	500 lbs. but less than 10,000 lbs.	10,000 lbs. but less than 20,000 lbs.	20,000 lbs. but less than 30,000 lbs.	30,000 lbs. and over
Montreal to Frobisher Bay	36¢	34¢	32¢	30¢	28¢	26¢
Montreal to Hall Beach	45¢	43¢	41¢	39¢	37¢	35¢
Montreal to Resolute	54¢	52¢	50¢	48¢	46¢	44¢
Frobisher to Resolute	40¢	38¢	36¢	34¢	32¢	30¢

Atlas Aviation Air Schedules

Resolute to Arctic Bay and Pond Inlet - Every 1st and 3rd Thursday each month.

Resolute to Eureka - 1st Friday, each month.

Resolute to Mould Bay - 1st Saturday, each month.

Resolute to Isachsen - 1st Monday, each month.

Resolute to Grise Fiord - 1st Tuesday, each month.

Rates for aircraft per hour: Super Cub, \$ 50; Piper Apache, \$90; D. H. Beaver, \$100; D. H. Otter, \$150; Twin Otter, \$300.

Figure 18 - Queen Elizabeth Islands

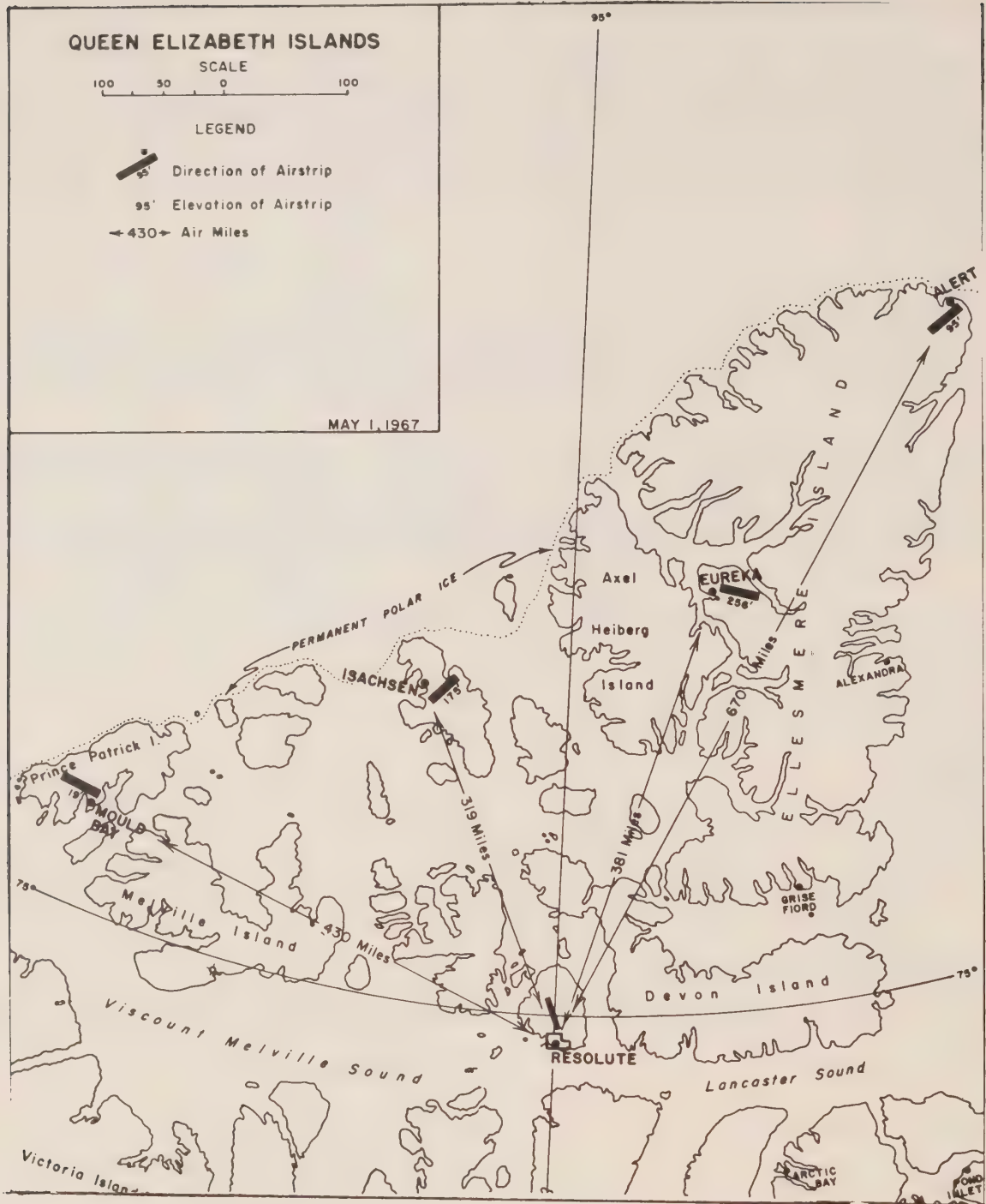


TABLE 17 - Atlas Fares and Routes

Routes	Mileage	Express/lb. (dollars)	Cargo/lb. (dollars)	Fare/Passenger (dollars)
Resolute to Mould Bay	431	1.20	0.60	120.00
Resolute to Isachsen	311	0.90	0.45	90.00
Resolute to Eureka	390	1.10	0.55	110.00
Resolute to Arctic Bay	225	0.64	0.32	64.00
Arctic Bay to Pond Inlet	150	0.40	0.20	40.00
Pond Inlet to Grise Fiord	288	0.90	0.45	90.00
Grise Fiord to Resolute	230	0.70	0.35	70.00
Resolute to Pond Inlet	360	1.00	0.50	100.00
Eureka to Isachsen	264	0.80	0.40	80.00
Isachsen to Mould Bay	318	0.90	0.45	95.00
Arctic Bay to Grise Fiord	244	0.70	0.35	70.00

Airlines Using Resolute Airstrip - 1966

The function of Resolute as an airstrip in the Queen Elizabeth Islands is shown by the number of airline companies using the facilities.

Heavy aircraft: Pacific Western Airlines, Nordair Ltd., Nordair Ltd., Kenting Aviation Ltd., Wardair of Canada Ltd., Royal Canadian Air Force.

Light aircraft: Atlas Aviation Ltd., Bradley Air Services, Northward Aviation Ltd., McMurray Air Services Ltd., TransAir Ltd.

Helicopters: Bullock Wings and Rotors Ltd., Autair Ltd., Okangan Helicopters Ltd.

In addition, company-owned aircraft of petroleum exploration firms also landed at Resolute. Since the main purpose of the airstrip facilities at Resolute is for the support of joint Arctic weather stations, aircraft operators regularly using the airstrip must make known their requirements for ground support. Aircraft operators using the airstrip facilities on an irregular or unscheduled basis must inform the Regional Director, Department of Transport, Winnipeg, two weeks in advance of their arrival at Resolute, of their

requirements in terms of ground support. Information must include aircraft type, ownership and purpose of the flight.

TABLE 18 - Volume of Freight and Passengers in Respect to Queen Elizabeth Islands, for Selected Companies, 1966^{*}

Company	Route	Total Freight in pounds	Passengers
Pacific Western Airlines Ltd.	Resolute to a site on Mackenzie King Island	1,000,254	21
" "	Edmonton and Yellowknife to Mackenzie King Island	82,000	43
" "	Mackenzie King Island to Inuvik, N.W.T.	506,000	-
" "	Calgary to Resolute to Eureka	34,000	20
Nordair Ltd.	Resolute to Mould Bay	800,000	-
" "	Resolute to Alert	300,000	-
" "	Montreal to Resolute	465,000	550
Wardair Ltd.	Into Queen Elizabeth Islands	80,000	20
Royal Canadian Air Force	Into Resolute	267,438	368

^{*}Anderson W.R., 1967

The statistics of freight and passengers for Pacific Western and Wardair pertain to petroleum and mineral exploration. Those of Nordair pertain to scheduled air services to Resolute and charter work beyond Resolute. Some statistics are available to indicate the increase in the number of aircraft passengers travelling to and from Resolute. These statistics have been tabled.

TABLE 19 - Airline Traffic, Yearly Passenger Totals,
Domestic Outbound and Destination Statistics

	1960	1961	1962	1963	1964	1965	1966
Resolute			130	425	615	830	1005
Cambridge Bay	145	195	510	435	445	650	630
Frobisher Bay	5975	5400	4905	4620	3520	3950	3815

TABLE 20 - Origin and Passenger Traffic,
Resolute, 1964-1965

Place to or From	1964 Passengers				1965 Passengers		
	Outbound	Inbound	Total		Outbound	Inbound	Total
Calgary	10	-	10		-	10	10
Cambridge Bay	5	10	15		-	-	-
Earlton, Ont.	-	-	-		-	10	10
Edmonton	20	20	40		-	-	-
Fort Chimo	-	-	-		20	15	35
Fort St. John	-	-	-		-	5	5
Frobisher	20	20	40		60	40	100
Halifax	5	5	10		-	-	-
Hall Beach	20	5	25		15	10	25
Montreal	195	205	400		310	270	580
Ottawa	30	10	40		30	10	40
Schefferville	-	5	5		5	-	5
Toronto, Hamilton	-	-	-		-	-	-
Victoria B.C.	5	10	10		-	-	-
TOTALS:	315	300	615		440	390	830

Source: D.O.T.

Route Statistics for Mainline Scheduled Aircraft travelling between Montreal
and Resolute October 1966 to October 1967¹

The following are the route statistics for the mainline scheduled aircraft travelling between Montreal and Resolute: Estimated number of revenue passengers handled at Resolute, 1,434; Estimated number of pounds of cargo handled at Resolute, 214,854; Estimated number of revenue pounds of mail handled at Resolute, 19,642.

¹

Based on Station Activity Reports

Charter Aircraft Rates¹

Aircraft companies under charter to the Department (D.I.A.N.D.) are responsible for charging or billing directly any non-departmental persons or freight carried. Charter aircraft rates are tabulated below:

Company	A/C Type	Per Pass Mile	Minimum Fare (dollars)	Per lb. Mile	Minimum Charge (dollars)
Nordair	DC3	0.11	25.00	0.00025	25.00
Georgian Bay	Otter	0.15	10.00	1/8	5.00
Wheeler Northland	Otter	0.10	2.50	0.0005	1.00
Atlas Aviation Ltd.	Otter and	0.30	9.00	0.0014	4.50
" " "	Twin-Otter	0.30	7.00	0.0016	7.00

Atlas is the only company based at Resolute on a year-round basis. Other companies are based at Resolute during the summer when charter work for oil companies or scientific parties is available. Between June 1, 1966 and May 31, 1967, Atlas Aviation had a charter contract with the Department of Indian Affairs and Northern Development valued at \$60,150. for flights in the Baffin Island region including the settlements on South Baffin.

Resolute has assumed major importance as a base for aircraft and helicopter companies operating in the Archipelago. The following charter companies were operating out of Resolute or using it as a terminal point in July 1968: Autair Helicopter Services, Spartan Helicopter Services, Gateway Aviation, Bradley Air Services, Northward Aviation, Kruger Helicopter, TransAir Ltd., Kenting Aviation. Such companies are engaged in short-term contracts or charters and find major advantages in the facilities available at the air base.

Break-up and Freeze-up at Resolute, N.W.T.

Break-up normally occurs in late July or early August. Freeze-up is somewhat delayed by storms but normally occurs in the latter part of September or the early part of October. A schedule of approximate shipping dates, Resolute, 1967, is tabulated below. Shipping schedules are posted by the Department of Transport well in advance of the actual arrival time. Schedules are disrupted by ice concentrations and delays in offloading at other ports-of-call along the route.

Vessel	Arr. Date	Dep. Date	Length Stay
"Labrador"	Sept. 14	Sept. 15	1 Day
"C.D. Howe"	Aug. 22	Aug. 22	1 Day
"N.B. Maclean"	Aug. 16	Aug. 28	12 Days

¹Letter to Area Administrator May 10/67

Vessel	Arr. Date	Dep. Date	Length Stay
John A. MacDonald	Aug.15	Aug.17	2 Days
Wolfe	Sept. 8	Sept.10	2 Days
Montcalm and D'Iberville	Aug.18	Aug.21	3 Days

Cargo Rates

The cargo rates for N.S.V. or D.O.T. fully chartered vessels from Montreal are \$120 per ton for general cargo. Point-to-point shipping rates for cargo originating in the high Arctic are \$35.00 per ton for general cargo.

Ships' Anchorages

Gajda (1964 p.8) has described the general condition in respect to Resolute in terms of ships' anchorages. Ships' masters prefer to anchor $1\frac{1}{2}$ miles off the beach-head and outside the submerged bar. However, due to difficult unloading operations they risk entering the bay and anchoring close to the head of the bay following channel depths from $6\frac{1}{4}$ fathoms to $9\frac{1}{4}$ fathoms to avoid numerous shallow areas. Ship to beach-head distance is approximately one half mile. Materials are barged from ship to beach-head and then trucked to warehousing at the South Camp or the Main Base. P.O.L. products are piped from ships into the tank farm close to the beach.

Re-supply of Joint Arctic Weather Stations

Eureka receives an annual sea-lift carried out by icebreaker during the summer. The remaining joint weather stations are re-supplied from Resolute by annual airlift carried out in the spring during optimal flying conditions. This is supplemented by scheduled and charter flights from Resolute.

TABLE 21 - High Arctic Shipping, D. O. T. Shipping from Montreal and Quebec

Vessel	Route	Amount (lbs.)
CGGS"John A. MacDonald"	Montreal - Pond	425
CGGS"Auk. Tanker"	Pond Inlet	734,200
"C. D. Howe"	Resolute Bay - Grise Fiord	235
	Pond Inlet - Pangnirtung	30
	Pond Inlet - Resolute	175
	Pond Inlet - Arctic Bay	5,000
	Grise Fiord - Frobisher	1,000
	Arctic Bay - Quebec	33,000
	Grise Fiord - Quebec	33,715

(Continued)

Vessel	Route	Amount (lbs.)
CGGS "John A. MacDonald"	Quebec - Resolute	100,000
	Pond Inlet - Grise Fiord	270,440
	Resolute Bay - Grise Fiord	970
	Grise Fiord - Pond	7,020
	Eureka - Resolute	2,308
	Resolute Bay - Eureka	65,617
	Montreal - Resolute	46,477
SS "Cabahawk"	Montreal - Resolute	3,214,493
	Quebec - Resolute	118,629
	Montreal - Pond Inlet	1,081,977
	Montreal - Arctic Bay	1,563,568
	Montreal - Grise Fiord	270,000
	Resolute - Montreal	218,134
	Resolute - Quebec	32,550
	Arctic Bay - Montreal	6,960
M. V. J. "Simard"	Montreal - Pond Inlet	864,000
M.V.S.J. "Crosbie"	Montreal - Pond Inlet	365,696
M.V. "Fort Severn"	Various Ports	300,272
M.V. "Pierre Radisson"		148,291
M.V. "Rupert River"		212,044
M.V. "Churchill River"		69,510

TABLE 22 - D.O.T. Shipping to Resolute from Montreal 1967

Source	Amount (lbs.)	Source	Amount (lbs.)
I.A.N.D.	130,256	Tower Foundation	130,024
	12,297		135,452
	3,370		161,023
	73,163		227,584
	129,653		
Eskimo Co-operative	73,015	Polar Continental	1,009,842
		National Research Council	6,076

Source: Department of Transport

An over-all total of 16,012,776 lbs. of cargo were transported to Resolute from Montreal on D.O.T. vessels in 1967. Southbound shipments between Resolute and southern ports (Montreal and Quebec) totalled 336,496 lbs. The southbound shipments consisted primarily of equipment being shipped south.

Icebreakers

A conventional icebreaker can move through pack-ice up to nine-tenths coverage. A concentration of large floes with a coverage of more than nine tenths and extensive in area is considered a barrier to icebreaker navigation. Continuous ice sheets are usually six feet or more in thickness. Penetration of pack-ice which is hummocked or rafted is possible only by the slow, frequently dangerous process of moving through zones of weakness (pressure ridge). In the latter spring, solid puddled ice (50 per cent or more) presents little difficulty for icebreakers. Freighters having reinforced bows and icebreaker escort can move through ice concentrations of seven tenths coverage or less provided the ice is in the form of small floes.

Conventional icebreakers encounter major difficulties in heavy pack-ice. This is the result of ramming and overriding floes in an attempt to cut a path through the ice fields. Icebreakers can be trapped in masses of floes which are heaved up on each side of the ship and frequently become a vise exerting pressure against the icebreaker and slowing its action.

The Alexbow consists of a fourteen-foot-high concave blade attached to a ship's bow. This is an extension of time-established snowplow designs which not only clear the snow from the immediate path but disperse it well to either side. The Alexbow is designed to glide under the unbroken ice, push it up out and away leaving an uncluttered sea-lane. Trials have been carried out on the Great Lakes in the winter of 1967-68 using a conventional barge (1,250 H.P.) with an Alexbow mounted on the front. In the summer of 1968, 2,000-ton barge equipped with an Alexbow carried drilling and trucking equipment from St. John's north to Melville Island. Three-to four-foot ice floes gave little difficulty in a series of tests in Viscount Melville Sound. Some difficulties were encountered with ice of greater thickness. Further tests are scheduled along the Labrador coast during the winter of 1968-69.

The major advantages in the Alexbow design are:

1. A clear sea-lane through heavy pack with broken ice well dispersed.
2. A reduction in the H.P. required by ships seeking to navigate ice fields permitting an increase in payload carried. The icebreaker Labrador is equipped with 12,000 H.P.

The Alexbow concept offers considerable hope for the utilization of large scale oil tankers or ore carriers in the high Arctic. Panarctic Oils Limited has estimated 15 per cent control of the Alexbow company. Development of the

ice plow is being carried out by Alexbow Ltd., with the internationally known firm of naval architects, Gilmore, German & Milne, of Montreal, as consultants. One of Canada's largest investment and holding companies, Power Corporation of Canada, Montreal, is involved in financing commercial application of the Alexbow.

An indication of the transportation handicap which has faced the Arctic Islands oil development has been provided in a study of the Panarctic project prepared by Nesbitt, Thomson and Company, Limited. It indicated that to market production from an assumed 300,000 b/d oil field on Melville Island would require a 500-mile, 36-inch, island-hopping pipeline from Melville to open-water at Greenland followed by tanker haul to Montreal. Large investment would be required to develop the 300,000 b/d production capacity plus \$285 million for the pipeline, storage and unloading facilities, while transportation cost is estimated at 79 cents per barrel.

Economical year-round tanker shipping through the polar areas could drastically reduce both the capital investment for transportation and the per-barrel hauling cost and enable production to be marketed without having to first develop 300,000 b/d production capacity. Developers of the Alexbow claim that a 50,000-ton tanker designed to operate year-round through polar-ice could be built in two years at a cost of \$18 million, seven per cent more than the cost of a conventional tanker of the same size.

The Alexbow concept has revived speculation in the potentials of the Northwest Passage as a shortcut from the Pacific to European ports. The distance from Tokyo to western Europe via the Panama Canal is 14,000 miles compared to a distance of 8,000 miles through the Northwest Passage. Substantial savings in distance to European markets could be effected from the west coast of Canada, Australia and the southeastern Asiatic Islands.

Part III - The Eskimo Community

History of the Settlement

Prior to the establishment of the Resolute Eskimo community in 1953 there were no permanent, contemporary Eskimo settlements on Cornwallis Island although the area was visited in the course of hunting trips by Tununirmiut and Tununirusirmiut Eskimos from the Pond Inlet, Admiralty Inlet and Somerset Island areas. These hunting trips have been discussed in the Northern Baffin report and were carried out to exploit the polar bear and (in earlier years) muskoxen known to inhabit the area.

Prior settlement in the Archipelago had been unsuccessful. This consisted of a Hudson's Bay Company post at Dundas Harbour (1934-1936) and a small population of Eskimos from Cape Dorset, Pond Inlet, Pangnirtung and Arctic Bay. Economic conditions were poor in the Port Harrison area of northern Quebec, in the 1940s and early 1950s. The Eskimos were experiencing a declining fur take, low fur prices and a decline in other resources (caribou). Representatives of both the Department of Resources and Development and the R.C.M.P. who are familiar with the northern islands, felt that resources were sufficient to support an Eskimo community on Cornwallis Island. The establishment of a weather station and R.C.A.F. base in Resolute in 1947 provided additional incentive in terms of maintaining communication with an isolated Eskimo settlement.

The matter of moving to Resolute was discussed with the Eskimos at Port Harrison by both R.C.M.P. personnel and representatives of the Department of Resources and Development. Four families, a total of 23 people, made the momentous decision to move north. In July 1953, the families with their household and hunting equipment, dogs and kayaks were taken aboard the C.D. Howe for transportation to Resolute. A Pond Inlet Eskimo family was added to the group. It was felt that a family from the Pond Inlet area could assist the newcomers in establishing themselves in a new environment with climatic and physiographic differences. The head of the Pond Inlet family was aware of the area as a rich resource zone and was one of the outstanding hunters on north Baffin Island.

TABLE 23 - Place of Origin of Eskimo Family Heads and Their Spouses^x

Male (Age)	Place of Origin	Place of Origin of Spouse	Male (Age)	Place of Origin	Place of Origin of Spouse
26	Pond Inlet	Pond Inlet	53	Port Harrison	Port Harrison
47	Port Harrison	Port Harrison	20	Somerset Island	Unmarried
26	Port Harrison	Pond Inlet	31	Port Harrison	Spence Bay
51	Pond Inlet	Pond Inlet	42	Port Harrison	Port Harrison
24	Pond Inlet	Port Harrison	52	Port Harrison	Port Harrison
52	Pond Inlet	Arctic Bay	22	Port Harrison	Unmarried
38	Arctic Bay	Arctic Bay			

^x Place of origin as distinct from birthplace.

TABLE 23 (continued)

Male (Age)	Place of Origin	Place of Origin of Spouse	Male (Age)	Place of Origin	Place of Origin of Spouse
24	Pond Inlet	Port Harrison	34	Port Harrison	Port Harrison
17	Port Harrison	Unmarried	34	Port Harrison	Port Harrison
44	Pond Inlet	Port Harrison	50	Port Harrison	Port Harrison
30	Pond Inlet	Cape Dorset	36	Port Harrison	Port Harrison
			32	Port Harrison	Port Harrison
			60	Arctic Bay	Widower

A breakdown of the population into age groups in the following table indicates the large number of children within the population structure. It also indicates the relative maturity of the adult population.

TABLE 24 - Population by Age Groups, Resolute 1967

Age	Male	Female	Age	Male	Female	Age	Male	Female
71-74	-	1	25-29	4	5	9	2	1
65-70	-	1	20-24	3	5	8	2	2
60-64	1	-	16-19	8	5	7	4	-
55-59	-	1	15	2	1	6	5	2
50-54	5	1	14	3	2	5	4	3
45-49	2	3	13	1	2	4	1	4
40-44	3	2	12	-	-	3	4	2
35-39	4	2	11	2	3	2	6	4
30-34	3	3	10	4	5	1 or less	6	7

Size of Family Units, Resolute, N.W.T. 1967

Family units have a tendency to be large with smaller family units signifying recent marriage.

Size	2	3	4	5	6	7	8	9	10	11	12
No. F.U.		1	1	2	4	4	3			1	

The ages of five unmarried males were as follows: 26, 22, 20, 18, and 18. The ages of five unmarried females were as follows: 27, 20, 17, 16 and 16.

Eskimos Attending School in Churchill Manitoba.

Four male Eskimos aged 18, 15, 20 and 18 respectively, and three females aged 14, 17, and 16 respectively were attending school. One family head was in Great Whale River but scheduled to return to his family. Two family groups consist of extended family groups incorporating widowed fathers and brothers.

TABLE 25 - Births and Deaths - Resolute Eskimos

Year	Total Population	Births	Deaths	Year	Total Population	Births	Deaths
1953	17	2	-	1961	78	6	1
1954	7	-	-	1962	89	5	2
1955	51	-	-	1963	98	4	0
1956	54	5	-	1964	114	6	3
1957	59	5	-	1965	126	9	2
1958	55	2	-	1966	124	12	Stillbirth
1959	82	6	-	1967 (Jan)	136	-	-
1960	83	4	-				

Births at Resolute

The following births have been recorded for the Resolute Eskimo group for the period January, 1964, to July 7, 1967.

TABLE 26 - Births by Monthly Rates

Period	Male Births	Female Births	Period	Male Births	Female Births
Feb. 16, 1964	-	1	July 26, 1964	1	-
Feb. 26	-	1	Sept. 16	1	-
May 30	1	-	Oct. 16	1	-
			TOTAL	4	2
Jan. 29, 1965	1	-	July 24, 1965	1	-
Feb. 27	1	-	Sept. 20	-	-
July 27	-	1	Sept. 20	-	1
Aug. 24	1	1	Oct. 15	1	-
			Nov. 16	1	-
			TOTAL	6	3
Feb. 26, 1966	-	1	Aug. 21, 1966	-	1
Feb. 25	-	1	Aug. 31	-	1
Mar. 1	1	-	Nov. 7	-	1
July 17	1	-	Nov. 9	1	-
Aug. 4	1	-	Dec. 10	2	1
			TOTAL	6	6

(Continued)

TABLE 26 (continued)

Period	Male Births	Female Births	Period	Male Births	Female Births
May 2, 1967	-	1	July 7, 1967	-	1
June 1	1	-			
			TOTAL	1	2

Deaths at Resolute

The following deaths have been recorded at Resolute for the period January 1964 to the end of June 1967.

TABLE 27 - Deaths by Monthly Rates

Period	Ethnicity	Age	Sex
Mar. 23, 1964	non-Eskimo	44	M
June 10	Eskimo	1½	M
July 7	non-Eskimo	34	M
Aug. 10	non-Eskimo	48	M
TOTAL	1 Eskimo, 3 non-Eskimo	-	
Aug. 20, 1965	Eskimo	24	M
Oct. 6	Eskimo	49	M
TOTAL	2 Eskimo	-	-
Nov. 7, 1966	Eskimo	34	M
Nov. 9	Stillbirth		
TOTAL	2 Eskimo (1 stillbirth)	-	-
Mar. 31, 1967	non-Eskimo	46	M
June 3	Eskimo	23	M

The deaths recorded for non-Eskimos were deaths which occurred among personnel at the Department of Transport Base. The small number of infant deaths in the Eskimo group is indicative of the general well-being of the population and the care and attention expended by the R.C.M.P. lay dispenser

and the male nurse at Resolute. The availability of aircraft and rapid evacuations in recent years have averted a high infant mortality rate.

Immigration

Original immigration under government auspices has been supplemented in recent years by immigration of families from other settlements Pond Inlet, Arctic Bay and Grise Fiord. Immigration from Port Harrison has not occurred in recent years due to an improvement in the economy in the Port Harrison area, the distance involved and relative lack of access. Air transportation costs are high between Port Harrison and Resolute and involve a roundabout routing with restrictions on the amount of personal luggage. The movement of entire families is an expensive proposition.

Recent immigrants in Resolute have arrived by dogteam from the Cresswell Bay area and more recently by aircraft. An Arctic Bay family moved to Resolute by aircraft in the spring of 1967. They left their sled dogs and other hunting and trapping equipment behind. In this particular instance, they have had access to the equipment of relatives in Resolute.

Immigrants arriving from Grise Fiord by dogteam managed to transport some of their equipment with them but left behind their trapping gear in anticipation of taking up employment at the base.

TABLE 28 - Immigration, 1955-1967

Year	No. of Immigrants	Year	No. of Immigrants
1955	34	1961	-
1956	3	1962	3
1957	4	1963	10
1958	-	1964	-
1959	13	1965	-
1960	-	1966	-
		1967	13

It should be noted that in 1962, one family came from Arctic Bay via Bellot Strait Camp. In 1963, one family unit came from Spence Bay and one family unit came from Grise Fiord. In 1967, one family unit came from Arctic Bay; another family unit came from Grise Fiord; and one, single male came from Cresswell Bay.

Emigration

Over the years, there has been some emigration, a Pond Inlet immigrant and his family are now settled in Frobisher Bay. Another Pond Inlet immigrant who came to Resolute with his uncle is now resident in Pond Inlet. The Port Harrison people have shown less tendency towards emigration due to distances involved. One family settled temporarily in Churchill before returning to Resolute.

The immigrant Port Harrison Eskimos are somewhat closely interrelated. Most of the adults have one or more siblings within the community. In recent years, marriages with the Tununirmiuts and Tununirusirmiuts of Pond Inlet and Arctic Bay have extended the family groups.

The Pond Inlet and Arctic Bay Eskimos display less extended family groupings within the community, but family kinship systems extend to north Baffin Island and Melville Peninsula. They are physically much closer to other members of extended family groups and have a greater contact than the Port Harrison people through either travel or the continuous flow of north Baffin Eskimos through Resolute to school or hospitals in the south.

The Pond Inlet and Arctic Bay Eskimos have a closer affinity with the physical environment and feel they could easily move away at any time, although they realize this would be uneconomic.

The Eskimo Community - Resolute

The Eskimo housing is located on a sedimentary strandline 31 to 35 feet above sea level and on the average 500 feet from the beach. The houses face the sea. The Co-operative store is located at the west end of the settlement and the Anglican church is to the northwest.

The D.I.A.N.D. housing and other buildings are located 50 to 60 feet above sea level and are located in two rows north of the Eskimo housing. Two parallel gravel roads run in an east-west direction connecting all major buildings in the settlement and extending to the base. The two-classroom school is readily accessible from the Eskimo housing and is central to the settlement.

There are a number of depressions between the strandlines and these tend to be catch-alls for various types of refuse. Drifting of snow occurs in the depressions and on the south side of the D.I.A.N.D. buildings.

D.I.A.N.D. Buildings

D.I.A.N.D. buildings consist of the following: two-classroom school; Administrator's house and office; garage - heated - 3 bay; warehouse and community hall; two teacherages - 1 three-bedroom, 1 two-bedroom; two small unheated warehouses - one being used by the Co-operative as a storage unit; janitor's one-bedroom house. There is also a small plywood cabin used occasionally by the Canadian Wildlife Service personnel on trips into the high Arctic.

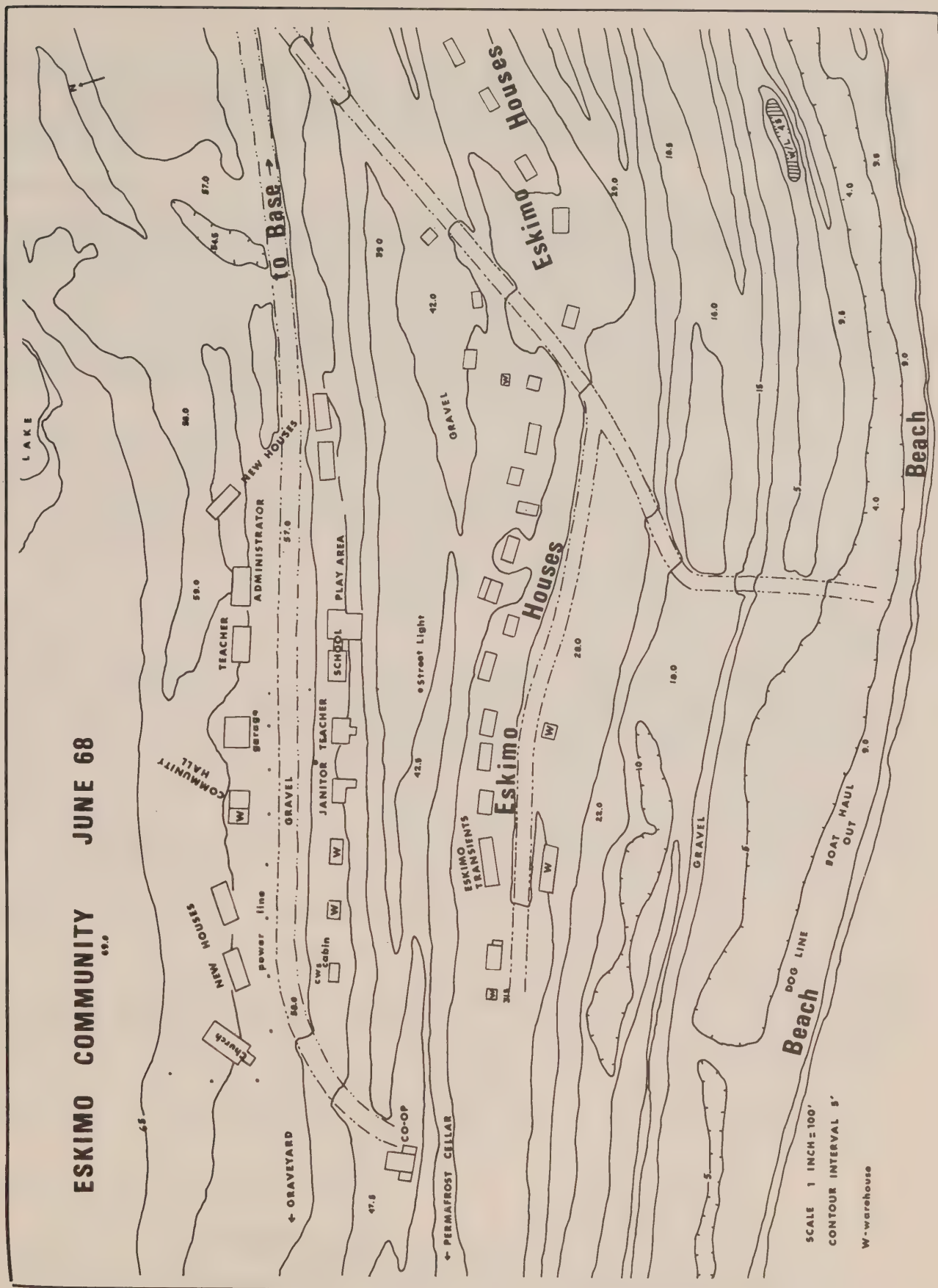
Northern Health Services

A trailer unit is scheduled to be delivered in 1968 by sea-lift. Arrangements were completed in 1968 for the Tower Company nurse to spend part of the day at the nursing unit with funds being set aside by Northern Health services to meet the costs of the operation until such time as a nurse could be supplied for the community.

Low-Cost Rental Housing

The occupants of the five new low-cost rental housing were disappointed

Figure 19 - Eskimo Community, June 1968



by the lack of space available in the houses after having lived in their own housing which, in the majority of cases, was rambling with storage porches and additional rooms depending on the size of the family and the need for space.

Water Supply

An adequate water supply has long been a problem at Resolute. In the winter, the Eskimos have tapped nearby icebergs or merely gathered snow from nearby snowbanks. In the summer, water has been hand carried from a lake located 650 feet from the settlement (Eskimo housing). In 1967, an attempt was made to divert water to the Eskimo housing by means of a plastic pipe and gravity feed. There is a freshwater stream two miles east of the settlement but the water supply decreases after the spring runoff. Road access is available to this stream. Under the Eskimo housing rental plan, water is supplied by tanker truck in addition to fuel oil.

Transients

Transients are normally quartered in the house of the lay preacher but Pond Inlet Eskimos frequently stay with Pond Inlet families at Resolute. Transportation to and from the village to the base is provided by the Tower Company nurse or D.I.A.N.D. depending on the status of the transients. In winter, the road is kept open by Tower Company.

Anchorage

While depths are adequate for anchoring whaleboats and Peterheads, there is no protection from winds or drift ice and boats either have to be pulled out during storms or anchored in the small bay to the east of the settlement. This is also used for anchoring larger boats during sea-lift operations.

D.I.A.N.D. Vehicles

The Department of Indian Affairs and Northern Development operates a $\frac{1}{2}$ ton panel passenger truck (1963) and a bombardier. Maintenance problems such as major repairs are completed at the D.O.T. base. Day-to-day servicing is carried out on site by prevailing rate Eskimos employees.

Employment Available in Village

The categories of employment available in the village are listed below:

Type of Work	Income Range (dollars)
School janitor	4,000 to 5,000
Classroom assistant	1,300
Co-op store manager	1,500
Casual labour	variable according to work available
Construction labour	variable according to work available
Interpreting	no date

Sea-lift

The sea-lift is handled by D.O.T. stevedores. Volunteer labour crews are formed by Co-op members for the purpose of warehousing the Co-operative's orders.

Administration

In recent years, the role of the R.C.M.P. in terms of administration of Eskimo affairs has been taken over by the Department of Indian Affairs and Northern Development.

The Area Administrator acts in the following capacity: games and fur export permit officer; vehicle and operator licensing officer; family allowances officer; old age security officer; welfare representative.

As local representative of the Territorial Government and the federal Government he provides liaison and support to other government agencies. In terms of the community, the Administrator provides direction and assistance in community development projects and various organizations. He is the co-ordinating agent for education, welfare and engineering programs carried out by the Department.

The Eskimos of Resolute are more aware of Departmental responsibilities than those in other more isolated communities. In the past they have contacted both the N.W.T. councillor at Frobisher Bay and the regional administrator of the Department in respect to administration of their affairs by non-Eskimos. The Eskimos at Resolute are inclined to be independent and self-reliant, but accept many forms of Departmental assistance or advice. They have operated for a number of years independently of Departmental advice in employer - employee relationships with other agencies. Over the years, relations between the R.C.M.P. and the Eskimos generally have been excellent. Until 1966, the R.C.M.P. were directly involved in the operation of the Co-operative through assisting with management and accounting. The Eskimos have now assumed total operation of the Co-operative at the local level as a result of training courses sponsored by the Department.

Community Development

Community Development has had a slow growth in the community. This is due to a number of factors; chiefly, the availability of work at the base and the small allotment of community development funds. The major community development project has consisted of the construction of a permafrost cellar for the storage of meat taken during the summer for use in the winter. The permafrost cellar was undertaken with some enthusiasm as a number of Eskimos were familiar with permafrost cellars at Hall Beach and Grise Fiord. The permafrost cellar was constructed in beach gravel two hundred feet west of the Co-operative store. It has an interior floor space of 16 feet x 16 feet with a height of six feet.

Total Cost of Permafrost Cellar

Equipment operation cost \$39.00. The foreman of volunteer labour crew was paid \$66.50. Total cost \$105.50. Volunteer labourers (23) worked on construction of the permafrost cellar in August and September. Materials

were donated. The permafrost cellar was not utilized during the winter in order to permit the permafrost to regain its former level. Spring clean-up came to \$118.00 and involved 31.43 man days. Sewage collection amounted to \$166.08 or 81 man hours.

Proposals for community development included repairs on community hall (\$200) and construction of a trapping and hunting cabin on Bathurst Island. Both projects failed to materialize due to a lack of interest on the part of Eskimos. A multiplicity of activities with occasionally conflicting interests take place at Resolute.

Housing

Following a brief interval in the 1950s when tents and igloos were used for shelter, the Resolute Eskimos built houses of excess materials from the D.O.T. base. These were patterned after non-Eskimo type shelters being rectangular in shape with hip or sloping roofs. Porches and store rooms were included to provide space for food and equipment. Used furniture was avidly collected to provide increased comfort and sleeping platforms were replaced by beds and couches. Heating was provided by oil stoves and space heaters.

Additional rooms were added to provide for increases in the family units. The nuclear family unit occupied separate housing. In 1967, there were no examples of communal living in Resolute. In three cases, grandparents, whose spouses had died, were living with married children and were considered an integral part of the family unit. In one case, a young married couple had built a distinctly separate housing unit as an addition to the housing unit of the wife's parents. Unmarried adult siblings live under the parental roof.

With minor exceptions, the interiors of the houses were clean and well-kept. Washing machines were a standard part of household equipment with two exceptions. The exteriors and interiors of the houses have been painted with excess paint collected from the base.

Equipment in the Homes

The Eskimos family units are well-equipped in terms of radios, tape recorders and record players. Fifteen family units have washing machines. In general, the homes are well-furnished with furnishings obtained from the base. Fairly extensive surplus stocks occur at the base from time to time.

The new low-rental three-bedroom homes are equipped with basic furniture.

TABLE 29 - Sampling of Household Equipment

Household	Radio	Tape Recorder	Record Player	Telephone	Washing Machine	Sewing Machine
1	1	1	1	1	1	1
2	1	-	1	1	1	1
3	3	1	1	1	1	1

(Continued)

TABLE 29 (continued)

Household	Radio	Tape Recorder	Record Player	Telephone	Washing Machine	Sewing Machine
4	2	-	1	1	1	1
5	1	1	1	1	1	1
6	2	-	-	1	-	1
7	1	1	1	1	1	1
8	1	1	1	1	1	1
9	1	1	1	1	1	1
10	2	1	1	1	1	1
11	2	1	1	1	1	1
12	1	-	1	1	-	1
13	2	1	-	1	1	1
14	1	-	1	1	-	1
15	1	1	1	1	1	1
16	4	-	1	1	1	1
17	2	1	1	1	1	1
18	1	1	1	1	1	2

Future Use of Housing

With the erection of low-cost housing units rented according to income, the existing housing becomes surplus. In 1968, four of the units became vacant. One was occupied by an Eskimo family who moved from a less substantial unit. Another house was being used as a warehouse. The Eskimo owner of the third unit planned on renting his unit to a non-Eskimo employee of the base who wanted to bring a son north to live with him. Considering the state of the housing, the investment in time and the value of the materials used in building the housing it would be wasteful to contemplate destruction of these units pending the development of the community and the possible expansion of tourism.

Heating Oil

Expenditures on heating oil have been high. Many of the old houses are rambling structures and require oil heaters in addition to the cooking stoves. Estimates by house owners varied from 180 to 225 gallons per month during the cold months, November to the end of April. Total annual fuel consumption estimates varied between 500 and 2,500 gallons per house. The provision of subsidized rental housing will solve the problem of high heating costs.

Clothing

In addition to clothing purchased at the Co-operative store, family allowance cheques are extensively used in mail order purchases from Eaton's Ltd.

Garbage Disposal in Eskimo Village

There are three organizations which may dispose of garbage in the village: D.I.A.N.D., Tower Corporation, Co-operative. Such service so far has been

provided by Tower Company on behalf of D.O.T. Planning is now in progress for the handling of garbage from the new Eskimo rental houses.

There will be 25 units including Departmental houses (i.e. teachers, school, etc.). A tender by Tower Corporation was based on an estimated service of 4½ hours per day. Service will be required three times per week. Service charges are: truck and trailer, \$6.00 per hour; driver, \$6.00 per hour; two labourers at \$6.00 per hour.¹ Total cost per trip is \$24.00 per hour, \$108 per day, \$324 per week, \$1,296 per month.

It appears the Co-op organization should handle garbage disposal thereby keeping as much money as possible in the community. A street clean-up in the community in June 1967 by Tower Company which consisted of picking up of garbage, collected by the Eskimos, cost approximately \$800.

Communication with The Base

Twenty of the Eskimo homes are linked to the base by telephone. This provides direct communication between employer base facilities and employees, as well as providing an inter-communication system between houses and with the D.I.A.N.D. establishment (Administrator, Teachers). Charges are \$4.50 for installation and \$3.50 per month.

Education

The R.C.M.P. officer at Resolute encouraged the Eskimos in starting a school for children in the community. In the autumn of 1955, an Eskimo teenage girl began school for other children in one of the Eskimo houses. The girl had received missionary schooling at Pond Inlet and in southern hospitals. The school was irregular but continued until the spring of 1958. Assistance was given in the form of text books and classroom supplies provided by the Department of Northern Affairs and Natural Resources. The school was closed due to the departure from Resolute of the Eskimo teenager in 1958.

In January 1959, the Department of Northern Affairs and Natural Resources opened a make-shift school in a quonset hut at the south camp. Twenty children were enrolled. A non-Eskimo teacher hired by the Department lived at the south camp. In 1960 a two-room school unit destined for Clyde River was unloaded and erected in the Eskimo community. Education facilities have been available in the community continuously since that time.

TABLE 30 - Education Statistics

Date	No. of Teachers	Classroom	Eskimo		Other		Grade Dispersion												Total
			M	F	M	F	1	2	3	4	5	6	7	8	9	10	11	12	
1964-65	1	1	14	15	1		5	7	8	8	2								30

¹Charges for labourers were raised from \$6.00 to \$7.00 per day in 1968

(Continued)

TABLE 30 (continued)

Date	No. of Teachers	Classroom	Eskimo		Other		Grade Dispersion												Total
			M	F	M	F	1	2	3	4	5	6	7	8	9	10	11	12	
1965-66	1	2	16	16		1	8	7	10	5	1	2	-	-	-	-	-	-	33
1966-67	2	2	19	15	2	1	11	7	6	6	4	2	3	-	-	-	-	-	39

TABLE 31 - Age Range of Students in Higher Grades, June 1967

Grade	Sex	Age	Grade	Sex	Age
IV	Male	11	V	Female	13
"	"	14	"	Male	11
"	Female	9	"	Female	12
"	"	9	"	Male	13
"	"	15	VI	Female	16
"	Male	12	"	"	15
"	Female	13	"	"	14
"	"	10	VII	Male	15

The eleven-year-old male in Grade V was a non-Eskimo and the fifteen-year-old male in Grade VII was receiving tuition by correspondence.

Three non-Eskimo children attend school. The parents are owner-operators of an aircraft company located at the D.O.T. base and the children commute daily.

Attendance is usually high but this depends to some extent upon the teacher. A lack of discipline and ineffective teaching lead to poor attendance. The parents are more than willing to co-operate in getting children to attend school.

Adult Education

In the winter of 1967-68, adult education consisted of sewing and cooking classes for the women conducted by one of the school teachers with the assistance of an interpreter. The necessity of using an interpreter indicates the gap in language ability between the men who can converse in English and the women who with the exception of teenage girls are unable to speak in English with any fluency.

The men have manifested an interest in ski-doo maintenance courses and elementary medical training to assist them in coping with illnesses at home and accidents on the trail while hunting or trapping.

Health Facilities

Most of the adult sector of the population and many of the children have spent time in hospitals for various reasons either in the south, Frobisher Bay

or Camsell hospital in Edmonton. Due to the proximity of a non-Eskimo base there is a tendency for Eskimos to frequently contract flu or other illnesses brought into the area by base personnel returning from leave, transients or Eskimo patients returning from southern hospitals.

The male nurse and the R.C.M.P. Constable at the Resolute Base have administered to the health of the Eskimo community. Northern Health representatives from Edmonton visited the Eskimo community frequently on P.W.A. flights or R.C.A.F. flights originating from Edmonton until these ceased in 1968. Northern Health representatives from Frobisher visit the community on trips to Pond Inlet, Arctic Bay and Grise Fiord. The nurses from Pond Inlet and Arctic Bay travelling out on medical evacuations from those communities assist in health problems arising in the community. Annual X-ray surveys, medical and dental check-ups have been carried out by medical teams on the C.D. Howe.

In 1968, Tower Company Ltd. representatives met with the Northern Health Service and discussed health problems arising in the Eskimo community and the large amounts of time being expended by the male nurse in visiting and caring for patients in the village. The Northern Health Service agreed to meet part of the annual salary of the male nurse with a contribution of \$5,000.

Social Assistance

Due to the availability of wage employment at Resolute, social assistance payments have not been as high as in more isolated Arctic communities. In recent years, the community principal or the Area Administrator has acted as the local welfare representative. Changes in staffing affects the amount of social assistance available in the community. Area Administrators or teachers new to the north and the community encounter some difficulty in assessing the need for social assistance. The major causes of social assistance have been economic need arising primarily from health factors among two families in the community. Other families have received assistance due to the hospitalization of adult male wage earners.

TABLE 32 - Social Assistance Monthly Issues, Resolute, 1964-1967

Month	1964-65	1965-66	1966-67
April	72.59	191.89	58.50
May	156.75	241.76	62.33
June	Nil	165.31	46.70
July	Nil	148.81	82.53
Aug.	Nil	299.00	29.71
Sept.	204.64	310.63	59.97
Oct.	183.17	507.56	65.00
Nov.	111.41	509.79	136.25
Dec.	104.73	427.10	186.00
Jan.	238.67	122.30	75.00
Feb.	384.85	47.02	89.00
March	160.25	62.36	112.00
TOTAL	1,456.81	3,033.53	1,002.99

The annual social assistance expenditures may be compared with those of other high Arctic settlements.

TABLE 33 - Annual Totals, Monthly Social Assistance Payments (in dollars)

Year	Resolute	Grise Fiord	Arctic Bay	Pond Inlet
1964-1965	1,456.81	2,492.28	2,346.32	4,932.49
1965-1966	3,033.53	3,955.36	4,856.86	3,410.18
1966-1967	1,002.99	7,900.34	7,830.19	4,302.14

In 1967, for comparative purposes, the Eskimo population was as follows: Resolute, 136; Grise Fiord, 86; Arctic Bay, 223; and Pond Inlet, 347. Resolute is the only community where full-time employment is available for a major part of the male labour force. Elsewhere, a very small sector of the total male labour force is engaged in full-time employment.

TABLE 34 - Local Welfare Issues, 1966^x

Date	No. of Cases	Dep.	Maintenance dollars	Groc. dollars	Clothing dollars	Total Issues dollars
April 1966	1	2	-	40.00	18.50	58.50
May	1	2	-	42.00	20.33	62.33
June	3	4	32.00	40.00	6.70	78.70
July	5	6	38.00	50.00	32.53	120.53
Aug.	1	2	-	29.71	-	29.71
Sept.	2	4	60.00	59.97	-	119.97
Oct.	1	2	-	65.00	-	65.00
Nov.	3	7	10.00	115.00	21.25	136.25
Dec.	8	12	86.00	165.00	21.00	272.00
TOTALS	26	41	226.00	606.68	120.31	942.99
Jan. 1967	7	7	144.00	65.00	10.00	219.00
Feb.	7	8	84.00	65.00	56.60	265.60
March	7	9	112.00	65.00	-	177.00
April	1	2	-	40.00	18.50	58.50
May	1	2	-	42.00	20.33	62.33
June	3	4	32.00	40.00	6.70	78.70
TOTALS	25	32	372.00	337.00	92.13	663.13

^x Excluding fuel, shelter, and miscellaneous items.

Accommodation for Transient Eskimos at Resolute

Accommodation of transient Eskimos travelling through Resolute to and from other centers are handled by the D.I.A.N.D. Administrator and the R.C.M.P. Information on the movement of Eskimos is received by radio or telephone.

Outgoing patients travelling to Frobisher Bay or southern hospitals for treatment are the responsibility of the Northern Health Service. The R.C.M.P. Constable at Resolute takes charge of providing accommodation for patients. Payment for accommodation is made from the Frobisher Bay hospital. Returning patients, school children and vocational trainees are the responsibility of D.I.A.N.D. Transportation is provided by D.I.A.N.D. vehicle between the airbase and the village. Accommodation is arranged with Eskimo families in the village. The lay preacher accommodates the majority of Eskimos. Accommodation for returning patients is paid for. Welfare payment forms are negotiable at the local co-operative store. Students and vocational trainees are paid for by cheque issued from the Regional Office of D.I.A.N.D. The problem of patients is not easily overcome. Returning patients exposed to communicable illnesses circulate freely about Eskimo homes. Outgoing patients are frequently uncomfortable in the available accommodation. These existing difficulties will be partly overcome through the erection of a N.H.S. unit in the village in the autumn of 1968.

Eskimos travelling on their own volition are responsible for their own accommodation costs and stay with relatives and friends. Few Eskimos are able to afford the cost of independent air travel, although a small number of Eskimos travel to Frobisher or south on holidays. These are prevailing rate employees with ample incomes.

The Resolute Co-operative

The Co-operative plays a dominant role in the social and economic life of the Eskimos in Resolute. It is the vital source of non-local food and equipment. The community attitude towards it is proprietary and it is functional without extensive supervision or administration by non-Eskimos in the community. Formation of a co-operative at Resolute occurred in 1960. The first meeting of Eskimos took place in May 1960. Incorporation occurred on October 18, 1960. The first election was held on November 27, 1960.

The R.C.M.P. provided liaison between the Co-operative and the Department and other agencies. The R.C.M.P. Constable at Resolute acted as secretary treasurer. This was a vital service for a fledgling Co-operative with its relative isolation and the limited business experience of the elected board of directors.

The Resolute Co-operative holds a business licence (\$10.00), a trading post licence (\$1.00) and a trading and trafficking licence (\$150) issued by the N.W.T. government. These are renewed annually.

The Co-operative store is a 20 feet x 34 feet, one story frame building. An addition 10 feet x 16 feet was erected in 1967 to provide additional space for shelving and display of goods. The building is insured against loss. The store is open four times weekly, Mondays, Tuesday, Thursdays from 5 to 7 p.m. and Saturday 3:30 p.m. to 5:30 p.m. Supplies of food, clothing,

equipment etc. are received on the annual sea-lift in August. Co-op members assist in warehousing of materials.

The Resolute Co-operative has acted as supplier of fuel oil, purchasing it from Arctic Services Ltd. a sub-contractor of Imperial Oil at Resolute. Stove oil is priced at 72-23 cents per gallon delivered in drums from the D.O.T. base. There is a 25 per cent mark-up in price of 90 cents per gallon to the Eskimo consumer. The Co-operative is responsible for providing clean drums to the supplier.

Board of Directors

The Board of Directors of the Resolute Co-operative consists of six male members. The Board meets regularly every two weeks. Meetings are held in private unless there is some special reason for a public meeting. Composition of the Board of Directors is based on a number of factors. There is evidence that members are being elected on the basis of business acumen as well as position in the community. Ages of members of the Board of Directors ranged from 18 to 50. Younger members have had sufficient education to be able to keep accounts, conduct business meetings and carry on business correspondence.

TABLE 35 - Co-operative Stores Sales, 1957-1961

Date	Sales (dollars)	Date	Sales (dollars)	Date	Sales (dollars)
Sept. 1957	6,913.85	Jan. 1959	1,360.55	May	98.93
Oct.	5,243.00	Feb.	825.10	June	662.22
Nov.	1,393.40	March	809.60	July	289.45
Dec.	2,004.30	April	722.10	Aug.	3,609.83
Jan. 1958	1,366.25	May	883.75	Sept.	4,780.46
Feb.	961.90	June	412.35	Oct.	2,596.40
March	756.25	July	552.05	Nov.	1,648.58
April	540.35	Aug.	391.25	Dec.	1,143.13*
May	1,365.15	Sept.	2,435.45	Jan. 1961	1,909.27
June	1,000.60	Oct.	4,552.54	Feb.	1,474.22
July	490.05	Nov.	2,323.42	March	1,446.93
Aug.	1,022.00	Dec.	8,840.27	April	1,273.49
Sept.	5,023.50	Jan. 1960	739.97	May	
Oct.	997.25	Feb.	1,560.28	June	
Nov.	2,012.55	March	1,841.72	July	
Dec.	1,825.95	April	2,342.01	Aug.	

* Establishment of the Co-op on November 27, 1960.

TABLE 36 - Individual Eskimo Credits in the
Resolute Co-op Store May 31, 1961

Credits (dollars)	Debits (dollars)
1,413.32	762.74
820.36	15.05 loan
1,485.27	829.39
43.92	1,693.24
0.08	2,184.13
1,652.67	820.32
1,555.31	626.55
728.79	797.15
510.73	327.81 debt.
246.03	160.00

Some indication of the status of members' accounts may be derived from the following table on page 79.

TABLE 38 - Food Sales in the Resolute Co-operative Store,
September 1966 to August 1967 Sales

Commodity	Price	Quantity sold
Flour	\$10.80 (100 lbs.)	10,000 lbs.
Baking Powder	1.10 lb.	360 lbs.
Sugar	.11 lb.	8,000 lbs.
Jam	.60 (24 oz.)	64 lbs.
Pilot and Ritz Biscuits	.70 (pkg.)	240 lbs.
Rolled Oats	.65 (5 lb.)	225 lbs.
Klim (milk)	4.50 (5 lb.tin)	600 lbs.
Lard	.35 (lb.)	2,700 lbs.
Canned Juices	.45 (20 oz.tin)	65 assorted cases
Canned Vegetables	.20 (20 oz.tin)	49 assorted cases
Canned Meats	.95-2.10	70 assorted cases
Canned Chicken	2.35 (3 $\frac{1}{2}$ lbs.can)	420 lbs.
Kam, Spam	.70 (can)	25 cases
Corned Beef	.60 (tin)	384 tins
Pork and Beans	.30	5 cases
Rice	.35 (14 oz.box)	330 lbs.
Maccaroni	.30	480 lbs.
Candies	2.40 case	50 cases
Cigarettes	4.80 carton	750 cartons
Cigarette tobacco	2.10 ($\frac{1}{2}$ lbs.tin)	75 lbs.

Food sales indicate the degree of dependence on non-local foods. Additional candies and cigarettes are purchased from the base commissary. The following major food items shown in the following table were ordered for delivery on the annual sea-lift. In addition, a wide variety of less essential foods stocks and sundry items were included in smaller quantities.

TABLE 39 - Co-operative Sea-lift Order, 1967

Item	Quantity
Various canned meats	127 cases
Frozen meats	30 cases
Flour	8,000 lbs.
Sugar	10,000 lbs.
Baking powder	15 cases
Crisco shortening	45 cases
Lard	15 cases
Butter	3 cases
Tea	21 cases
Biscuits assorted	89 cases
Baby food	26 cases

(Continued)

TABLE 39 (continued)

Item	Quantity
Dried fruits	57 cases
Canned fruits and veg. juices	92 cases
Canned fruits	152 cases
Klim	50 cases
Milk, evaporated	30 cases

It is interesting to note that sales of flour in 1966-67 totalled 10,000 lbs. whereas the order for 1967-68 totalled only 8,000 lbs. and the stock was exhausted three months before sea-lift. In 1966-67 the same thing happened in respect to sugar. Arrangements were completed with Tower Co.Ltd. for loan of these food stocks until sea-lift but only after a considerable period of doing without. Cake mixes were used as a substitute for bannock and bread.

Total monthly expenditures for household heads are listed. Age of the household head and number of dependents are listed respectively in the boxhead at top of each column. A number of single Eskimos with accounts are also listed.

TABLE 40 - Monthly Expenditures at Resolute Co-operative,
by Eskimo Householders, January 1966 to April 1967

Date	34 5	26 4	50 5	32 5	51 5	24 5
Jan. 1966	72.96	239.42	226.09	128.83	138.43	153.13
	113.35	98.52	110.99	173.43		151.18
	306.27	118.86	302.67	95.49	130.51	175.61
	204.32	206.16	198.74	216.92	140.25	93.88
	94.33	91.43	252.85	72.89	108.89	252.92
	130.44	121.54	149.76	77.51	109.26	114.32
	114.38	120.22	159.14	138.10	235.18	130.80
	255.83	68.40	86.34	78.94	82.57	34.27
	1306.07	515.27	474.81	443.31	281.40	1191.18
	246.51	266.17	185.35	291.65	283.05	256.69
	178.80	181.80	113.73	101.90	197.70	242.20
	168.85	128.47	154.70	1200.48	205.65	194.59
Totals	3192.11	2156.26	2415.17	3019.45	1912.89	2990.77
	152.90	135.24	128.10	-	159.25	115.98
	71.30	57.50	21.85	93.50	75.70	70.65
	-	-	78.20	-	-	-
Apr. 1967	243.70	65.63	174.40	132.15	158.95	129.03
	-	98.13	85.93	146.69	185.33	104.35
Totals	467.90	356.50	488.48	372.34	579.23	420.01

(Continued)

TABLE 40 (continued)

Date	44 12	17F 0	18M 0	19M 0	65F 0	52 8
Jan. 1966	179.53	17.25	54.48	225.64	78.76	150.81
	-	-	78.14	168.25	47.02	184.52
	164.82	14.98	4.00	267.37	62.36	113.35
	234.53	-	48.01	113.70	58.50	208.98
	186.13	5.85	25.20	196.70	62.33	125.05
	193.43	-	79.57	144.34	46.70	-
	218.32	-	81.13	300.65	82.53	147.31
	185.73	-	29.44	155.24	29.71	136.41
	463.14	-	846.08	171.01	59.97	186.53
	-	288.07	-	326.02	59.50	318.20
	174.19	-	-	96.00	37.75	251.29
	233.82	-	-	1096.75	46.00	221.33
Totals	2233.64	326.15	1246.05	3261.67	671.13	2043.78
	-	-	-	-	-	-
	186.63	-	-	-	56.30	217.33
	112.60	-	-	-	35.40	192.15
	142.71	-	-	149.80	40.00	190.10
Apr. 1967	185.15	-	-	-	34.25	-
Totals	627.09	-	-	149.80	165.95	599.58
	52 4	53 6	50 6	21 0	38 3	30 5
Jan. 1966	76.42	130.87	191.44	31.70	209.47	232.51
	147.72	155.05	107.86	77.38	98.78	196.39
	144.05	319.47	149.84	44.91	108.58	158.52
	141.36	152.68	224.73	92.90	131.10	103.66
	112.03	83.67	134.78	34.80	142.81	96.29
	-	109.39	-	2.75	-	92.06
	164.02	131.67	157.01	62.85	123.08	165.20
	81.13	105.34	134.36	97.30	79.30	87.01
	324.32	583.38	1573.69	220.79	-	737.27
	212.49	-	644.91	272.26	184.29	378.02
	126.40	73.70	131.45	114.70	152.80	-
	99.40	-	156.04	264.43	242.83	180.12
Totals	1629.34	1844.42	3606.11	1316.77	1473.04	2427.05
	59.39	109.90	105.55	91.38	186.68	149.62
	81.45	103.40	76.10	32.25	187.65	235.65
	72.35	116.44	76.48	37.70	100.55	111.85
Apr. 1967	-	143.85	-	-	-	168.45
Totals	213.19	473.59	258.13	161.33	474.88	665.57

(Continued)

TABLE 40 (continued)

Date	34 5	47 7	24 4	65 0	52 5	26 4
Jan. 1966	-	71.86	176.88	-	231.45	171.97
	43.74	141.25	181.19	9.45	103.65	121.50
	174.98	152.99	116.66	-	244.65	131.79
	96.42	149.35	115.02	-	144.72	178.23
	120.56	103.70	276.25	5.80	127.85	121.60
	68.41	84.76	143.10	-	68.95	141.31
	219.67	104.26	108.16	-	170.32	521.26
	77.66	94.38	-	-	109.14	99.54
	-	566.51	1052.00	22.67	1069.19	273.49
	422.16	367.66	84.12	27.66	302.25	216.69
	-	102.93	172.50	29.60	128.97	-
	125.38	105.25	169.04	105.50	262.87	180.03
Totals	1348.98	2044.90	2629.92	200.68	2964.01	2156.87
	97.30	106.20	103.85	17.55	125.45	75.00
	83.00	76.45	76.85	59.10	109.28	986.98
	101.85	73.55	67.41	36.27	141.64	68.42
Apr. 1967	141.95	-	83.03	21.71	137.83	-
	424.10	256.20	330.94	134.63	514.20	1130.40
	22M 0	60 1	20M 0	65 0		
Jan. 1966	54.80	-	-	-	14.90	
	-	38.46	-	-	20.10	
	-	48.84	-	-	31.50	
	19.10	42.14	-	-	23.35	
	79.80	42.90	99.85	-	38.21	
	-	82.00	-	-	31.63	
	104.30	32.95	-	-	16.17	
	122.80	26.30	-	-	8.99	
	92.06	55.39	-	-	-	
	504.34	246.37	-	-	50.85	
	140.21	117.46	-	-	-	
	20.70	72.84	-	-	41.95	
Totals	1138.11	805.65	99.85	-	277.65	
	28.65	59.75	-	-	46.85	
	20.85	46.55	-	-	57.95	
	65.75	17.78	-	-	68.60	
Apr. 1967	144.40	23.35	-	-	-	
Totals	259.65	147.43	-	-	173.40	

As can be seen from the statistics, substantial expenditures are made by individual families. Foodstuffs comprise the major purchase. There is a noticeable increase in expenditures following the arrival of the sea-lift and replenishment of store stocks. This is also a period when ski-doo's and other equipment from the south have arrived.

The Resolute Eskimos are extremely proud of their Co-operative and show a continuous interest in improving its operation. They are envied by the Pond Inlet and Arctic Bay Eskimos. The Resolute Co-operative can be deemed to be one of the most successful Co-operatives in the eastern Arctic, both in terms of financial condition and educational value. In July, 1968, share capital amounted to \$13,247.62. Statutory reserves amounted to \$20,306.49. The building fund amounted to \$1,779.44. Undistributed shares for the period 1965-1967 amounted to \$17,736.24.

An inventory carried out during the same period gave the following breakdown: groceries, 28.5 percent; hardware, 40 per cent; dry goods, 31.25 per cent.

Co-operative as an Employment Agency

In recent years, the Co-operative has assumed a role as an employment agency in the community due to the expansion in the retail establishment. The following incomes were received from employment during the period November 1967 to July 1968: November to May, \$705.10; November to February, \$535.75; December to March, \$313.10; November to July, \$1,650.00; February to May, \$225.00. With the exception of the \$1,650 paid for the period November to July, the remaining incomes were for part-time employment.

The Church

The population is totally Anglican. The lay preacher is a Port Harrison immigrant. A church was built in 1965. The community is visited from time to time by the Anglican missionary from Pond Inlet. Services are held twice on Sunday and during mid-week. Sunday school is conducted by two of the younger men in their twenties.

Community Recreation

On March 14, 1967, the Resolute Muskox Club was incorporated for the purpose of sponsoring and organizing community recreation activities in the Eskimo community. Activities were to take place in the community hall. The Muskox Club has rented films from the base and shown them in the community hall. The cost of the films is recovered through admission charges, bingos, etc. The Board of Directors elected from among the Eskimos shows a limited interest in organizing activities. Strong competition is offered by the Arctic Circle Club at the base and the majority of adult Eskimos prefer to go to the base for its varied entertainment rather than in the settlement.

Drinking Patterns

The Resolute Eskimos consume beer and liquor while at the bar in Resolute and drink as a group. Non-Eskimo friends are invited to join them for a drink and Eskimos may drink with particular friends among Tower or D.O.T. employees. Not all of the adult Eskimos drink. There are three families who frown against the practice. In March 1968, the Eskimos were allowed to bring their wives to the bar and promiscuity of one of the wives is held by

many residents to have been one of the factors leading to the death of a man in a ski-doo accident through drunken driving on rough terrain. It is impossible to assess accurately the amount of beer consumed by Eskimos. However, the general practice is to remain at the bar until closing time. The majority of Eskimos are not rapid drinkers but in the course of an evening manage to consume considerable amounts of beer and liquor.

Liquor is secured from Frobisher Bay through the outlet there and brought in on regular Nordair schedules. One Eskimo returning from the hospital in Frobisher Bay confided that he accidentally lost nine gallons of liquor he was bringing back for home consumption. Neither Eskimos nor non-Eskimos are permitted to purchase beer or liquor for consumption in homes or staff buildings. The bar is open from 4:30 to 5:00 p.m. and from 7 to 11 p.m. every night. A bingo open to all Eskimos is held on Saturday night. Transportation is provided for Eskimos returning from the bar.

Marriage Between Eskimos and Non-Eskimos

In recent years, marriages have occurred between Eskimos and non-Eskimos at Resolute. One Eskimo girl is married to a non-Eskimo and living in Saskatchewan. Two other Eskimo girls are engaged to non-Eskimos. As yet, no marriages have occurred between Eskimo males and non-Eskimo females. Eligible non-Eskimo females consist of the single teacher. Employment opportunities and accommodation are lacking which would permit families of mixed marriages to live at Resolute. Mixed marriages are a direct result of a lack of eligible males in the Eskimo population. Individual Eskimo girls are also becoming increasingly attracted to marriage with non-Eskimos for various reasons.

Part IV - Eskimo Employment and Income

The Labour Force

Minor changes have occurred in the labour force at Resolute in the period between 1961 and 1967. This is largely due to the fact that the community has remained small. Eskimos who were in employment in 1961 have continued in employment in various forms. The survey in 1967 indicated Eskimos had been involved in various forms of other employment during the intervening period, but employment at the base continues to provide the major source of income.

Wage Employment

There has been relatively little change in the employment situation at Resolute since the early 1960's. There have been no major changes in the Eskimo labour force.

No employment code dealing with Eskimos is in existence although Eskimo employment follows certain established lines. Permanently employed Eskimos receive \$350-\$450 per month in addition to a 4 per cent vacation pay. They receive three meals per day and there is scheduled transportation between the base and the village. The men are picked up at six and delivered to the dining hall where they have breakfast before commencing work. The work week is a six-day week with Sundays off except in emergencies.

TABLE 41 - Types of Employment of Eskimos at Resolute

Occupation	1966	1967	Rates of pay monthly basis 1967 (dollars)
Janitor	1	1	463.68
Carpenter's helper	2	2	438.00
Painter's helper	2	2	402.00
Mechanic's helper	1	0	438.00
Equipment operator	1	1	438.00
General help	2	1	330.00
Bus operator	1	0	330.00
Laundry workers	2	2	372.00
Casual labourer	-	2	330.00
Kitchen general help	1	1	348.00
TOTAL	12	11	

These wage rates compare favourably with DEWline employment where in 1964 the top rate was \$350.00 per month plus rations. In 1967, a DEWline Eskimo who had been employed since 1956, was receiving \$500.00 or an hourly rate of \$2.35 per hour. The reader should refer to Table 43 for the Eskimo labour force in 1961.

TABLE 42 - Theoretical Labour Force, 1967

Age Range	Male	Female	Age Range	Male	Female
60-65	1	-	35-39	4	2
55-59	-	1	30-34	3	3
50-54	5	1	25-29	4	5
45-49	2	3	20-24	3	5
40-44	3	2	16-19	8	5

TABLE 43 - Eskimo Male Labour Force at Resolute Bay, June 1961

Age	Occupation	Full-time activities				Part-time activities				School [*]	Dog-team	Canoe	Whaling boat
		Hunting	Trapping	Carving	Labor	Hunting	Trapping	Carving					
28	janitor	-	-	-	-	x	-	x	n.c.	x	x	-	x ½ share
35	-	x	x	-	x	-	-	x	-	x	x	-	-
46	cleaner	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	d.c.	-	-	-	-
26	-	x	x	-	x	-	-	x	n.c.	x	x	-	-
29	-	x	x	-	-	-	-	-	n.c.	-	-	-	-
28	S.S.	-	-	-	-	x	-	x	n.c.	-	-	-	-
45	-	x	-	-	x	-	-	x	n.c.	-	-	-	-
16	-	-	-	-	-	x	-	-	d.c.	-	-	-	-
44	-	-	-	-	-	x	-	-	n.c.	-	-	-	½ share
43	-	x	x	-	x	-	-	x	-	-	-	-	-
20	-	x	x	-	x	-	-	-	-	-	-	-	-
26	-	x	x	-	x	-	-	-	d.c.	-	-	-	-
17	-	x	x	-	x	-	-	-	n.c.	x	-	-	-
45	S.S.	x	-	-	-	-	-	-	-	-	-	-	-
37	S.S.	-	-	-	-	x	x	-	n.c.	-	-	-	x
20	-	x	x	-	x	-	-	-	n.c.	x	-	-	-
18	-	x	x	-	x	-	-	-	d.c.	x	-	-	-
27	-	x	x	-	x	-	-	-	n.c.	x	-	-	-
	5	12	12	1	13	7	2	14	11 n.c. 5 d.c.			4	3

^{*} n.c. - night class. d.c. - day class

As can be seen from the population statistics, the male sector of the labour force between 16 and 65 consists of 32 individuals. Three individuals have been hospitalized repeatedly, and one is no longer capable of full or part-time work. The existing labour force appears to be sufficient to meet existing employment opportunities available at Resolute. In fact, the labour force is not presently fully exploiting the existing employment opportunities as can be seen from the employment statistics. The 16 to 19 year age group is a potential rather than an operative sector of the labour force and individuals who are receiving vocational training will move into employment at Resolute or elsewhere.

The female sector of the labour force is limited by reasons of early marriage and family responsibilities. Very limited numbers of single females will continue to find employment in the laundry. An expansion of the Eskimo population through immigration should be predicated on employment opportunities rather than on the existing resource base.

Other Forms of Employment Available at the Base

There are seasonal jobs which arise as a result of Resolute being a strategic center for activities in the high Arctic and Resolute Eskimos have been employed by various government and private agencies as casual labourers. However, some device is needed to make oil exploration companies, government survey parties, etc., aware of the availability of casual labour in the high Arctic. Many of the adult Eskimos enjoy work involving travel to outlying areas and show little reluctance to be away from home. These remarks may seem facetious in the context of a small population such as Resolute, but employment is an important factor in the economy and some of the young men not now engaged in full-time employment could be employed seasonally to an advantage.

<u>Other Agencies</u>	<u>Season</u>	<u>No. Employed</u>	<u>Wages Paid</u>
R.C.A.F. Survival School	Late January to early Aug.	2	\$250 every two weeks meals
Polar Continental Shelf	Variable, usually summer	1-2	\$1.95 per hour
Petroleum Prospecting Companies	" "	1-2	\$2.25 per hour

R.C.A.F. Survival School

The R.C.A.F. survival school was designed to instruct R.C.A.F. personnel in survival tactics to be used in emergency landings in the Arctic. Civilians in government agencies (notably the Department of Indian Affairs and Northern Development) also were included in this course. Two Eskimo instructors from Resolute were regularly employed.

Problems Associated with Wage Employment

In general there is a conflict between hunting and employment. The increased prices for polar bearskins (1965-68) have effected Eskimo attitudes

towards employment. The younger age group (20-25) have shown a tendency to turn away from wage employment at the base except on a casual basis. This appears to stem partly from a greater sensitivity in Eskimo and non-Eskimo relationships which does not affect older Eskimos with less ability in English. The younger age group have few dependents. The major problem appears to lie in encouraging Eskimos to continue in wage employment and if possible increase the available labour force. It is interesting to note those who leave employment or are terminated have been successful in taking up employment again.

The major causes for termination of employment have been excessive absences and drinking. In an isolated location where drinking is one of the major forms of recreation for non-Eskimos, considerable leniency is shown in the matter of drinking by Eskimos.

Income

The major source of cash income for Resolute Eskimos over the past eight years has been income derived from wage employment at the base supplemented by smaller amounts of income gained through prevailing and casual labour for various government agencies. Income statistics have been presented in this report to indicate the relatively high incomes of the Resolute Eskimos. In addition to the income from employment, cash income has also been received through the sale of polar bearskins, fox pelts, carvings, sealskin garments and curios. The Resolute Eskimos are well aware of the advantages to be gained through higher incomes and engage in a diversity of activities.

Employment versus Hunting - Resolute

At Resolute, in recent years the Eskimos have shown a tendency towards working for extended periods during part of the year, and turning towards hunting and trapping for part of the year. This seems to be an established practice (with the exception of two older Eskimos who have turned almost entirely to wage employment) and this appears to be due to a number of factors: the relative abundance of game; the high prices received for bearskins on southern markets; improvements in hunting technology - use of the ski-doo which eliminates the burden of maintaining dogteams; the pressure of the families' requirements for meat.

The benefits of wage employment have declined in recent years. There is a less benevolent attitude on the part of contractors than on the part of the R.C.A.F. and the Eskimos do not receive gratuities in the form of technical assistance, surplus food stocks, etc.

The game takes for unemployed Eskimos show relatively slight variations from those of employed Eskimos and do not approach the amount of game taken in other areas such as Pond Inlet or Arctic Bay where hunting and trapping is a primary occupation.

TABLE 44 - Employment Record, Resolute Eskimos

Sex	Age	Dependents	Education [■]	Work Experience
Male	52	5	None	R.C.A.F. instructor, Tower (1967), deceased (1968).
"	53	6	"	Tower labourer, not in employment (1968).
"	36	5	"	R.C.A.F. labourer, D.O.T. labourer, Continental Polar Shelf, Tower (1967), not in employment (1968).
"	51	5	"	R.C.A.F. labourer, D.O.T. labourer, Tower labourer, Continental Polar Shelf, Tower (1967), D.I.A.N.D. construction (1968).
"	47	7	"	R.C.A.F. labourer, D.O.T. labourer, Tower labourer, D.I.A.N.D. construction, Tower employment (1968)
"	34	5	"	R.C.A.F. instructor (7 years), D.O.T. labourer, Tower labourer (3 years), Oceanographic field party, Tower employment (1968).
"	32	6	"	R.C.A.F. labourer, Tower heavy equipment operator (5 years), Tower employment (1967), Tower employment (1968).
"	34	7	"	R.C.A.F. labourer, R.C.M.P. special constable, R.C.M.P. employment (1967), Tower employment (1968).
"	52	4	"	R.C.A.F. janitor (3 years), D.O.T. sea-lift, D.I.A.N.D. labourer, D.I.A.N.D. employment (1967), hospitalized (1968).
"	52	8	"	D.O.T. labourer, Tower labourer, D.I.A.N.D. janitor, Continental Polar Shelf, Petro par, Continental Polar Shelf labourer (1968).
"	26	4	"	R.C.A.F. labourer, D.O.T. labourer, Tower labourer, Petro par, Tower employment (1967), not employed (1968).

[■]A number of older Eskimos attended night classes in English

(Continued)

TABLE 44 (continued)

Sex	Age	Dependents	Education [■]	Work Experience
Male	34	5	None	R.C.A.F. labourer (3 years), D.O.T. labourer, Tower labourer (2 years), D.I.A.N.D. labourer (3 years), Cominco labourer (2 months), not employed (1968).
"	50	6	"	R.C.A.F. labourer, D.O.T. kitchen help, Tower labourer, Tower employment (1967), D.I.A.N.D. construction (1968).
Female	20	1	Grade 5	Tower laundry, Tower employment (1967), Tower employment (1968).
Male	20	0	Grade 9 (Vocational)	J.C.Sproule (2 months), D.I.A.N.D. employment (1967), Co-op Manager (1968).
"	38	3	None	D.O.T. labourer, Tower labourer.
"	18	0	Grade 7	In Ottawa attending School (1968).
"	19	0	Grade 6	Tower labourer, Co-op Development Course (1968).
Female	18	0	Grade 8, Nurse's aid	Tower kitchen aid (1 month), married living in Saskatchewan (1968).
"	18	0	Grade 6	Tower laundry, Tower laundry (1968).
Male	24	4	Grade 6, Co-op course	R.C.A.F. labourer, Tower heavy equipment operator (3 years), Co-op employment (1967), D.I.A.N.D. construction (1968).
"	19	0	Grade 8, 3 years metal trades	D.O.T. labourer (1966), Cominco labourer, not in employment (1968).
"	22	0	Grade 4	R.C.A.F. labourer, D.O.T. labourer, Tower labourer, Co-op helper (1967), Co-op course (1968).
"	51	1	None	R.C.A.F. labourer, D.O.T. labourer, Tower labourer, D.I.A.N.D. construction (1968).
"	24	5	"	Tower kitchen helper (2 years), Tower labourer (4 months), D.I.A.N.D. labourer, not in employment (1968).

■ A number of older Eskimos attended night classes in English

(Continued)

TABLE 44 (continued)

Sex	Age	Dependents	Education [¶]	Work Experience
Male	26	4	None	R.C.A.F., DEWline heavy equipment operator, D.I.A.N.D. mechanic, janitor, qualified as commercial pilot (1968).
"	30	5	"	D.I.A.N.D. employment (1967), D.I.A.N.D. employment (1968).

[¶]A number of older Eskimos attended night classes in English

TABLE 45 - Work Performance, Resolute Eskimos, 1966-1967

Work category	Possible working days	Days worked	Leave granted	Comments
Janitor	304	270	3 weeks 2 weeks holidays 1 week to repair house	34 days absent
General helper	108	59	Prefers hunting	Terminated 49 days absent
Carpenter's helper	200	177	-	Associated with R.C.A.F. school
General helper	200	143	-	Associated with R.C.A.F. school
Equipment operator	304	255	-	Terminated for drinking but re-employed
Carpenter's helper	168	145	-	Permanent worker
General helper	180	174	-	Permanent
Mechanic helper	240	179	-	Terminated - now Co-op manager
Bus operator	240	177	-	Left employment 1967 temporary janitor
Painter's helper	276	165	-	Absent for 2 months 1966 to visit relatives in Port Harrison, tendency to drink excessively
Laundry worker	93	90	-	Capable, dependable
Laundry worker	93	90	-	Capable, dependable

As can be seen from the information tabled above the rate of absenteeism is high. This stems partly from the fact that the Eskimos are located off base. The situation at Resolute is in contrast to the DEWline where housing and rations were provided for employed Eskimos. Good returns from polar bear hunting can be obtained in the spring. The majority of workers fall into the middle age group with strong interests in hunting.

TABLE 46 - Estimated Income, Resolute, Supplementary Census, 1961

Age	Dep.	Time	Income	Monthly Income	Status
26	2	16 weeks	\$1200	\$400	Labourer
28	3	52 "	400	200	School janitor
31	3	12 "	1200	-	Labourer
37	8	34 "	3200	-	Survival-school instructor
		16 "	1200	200	Labourer
36	8	17 "	1300	400	Labourer
40	8	52 "	1600	-	Janitor
29	4	22 "	2000	400	Labourer
44	5	16 "	1500	-	Labourer
	1	20 "	1500	200	Driver

The figures for Table 47 may be compared with the earnings of Eskimo wage-earners from May 1961 to May 1962.

TABLE 47 - Earnings for Male Eskimo Wage-Earners
from May 1961 to May 1962*

Earnings (dollars)	Where Employed and When	Earnings (dollars)	Where Employed and When
5,557.87	RCAF Survival-School, Jan-May	781.77	Seasonal Labourer and CEU work
4,993.54	RCAF Detachment Resolute as labourers for C.E.U Section (6-1)	757.89	Seasonal, Polar Shelf work
4,919.98			
3,528.43	Cleaner RCAF Base (full-time)	613.44	Seasonal, Carpenter for NSO house
3,010.87	Heavy Equipment Operator (full) RCAF	394.33	Polar Shelf, CEU and other seasonal work
2,420.35	Mechanic Interpreter (full) RCAF	336.03	South Camp, Polar Shelf
2,208.59	Driver RCAF (full-time)	240.58	CEU
1,962.16	Cleaner and casual labourer RCAF	116.86	Seasonal labour
883.83	Seasonal Labourer and CEU work -	-	Hospitalized, not working
		n/k	Janitor for D.N.A. school, etc.

Note: C.E.U. - Construction Engineering Unit

*Chave, D. 1963, p.42

Total approximate earnings from wage employment for three years were as follows: summer 1959, \$15,000; 1960-1961, \$33,574; 1961-1962, \$34,948.

In 1965, the Department of Northern Affairs and National Resources (D.I.A.N.D.) carried out a housing survey in the eastern Arctic to assess the housing needs of Eskimos. In addition to assessments of existing housing units, sources of incomes were also tabulated. The incomes for Resolute cover a twelve month period preceding the actual survey carried out in March 1965.

TABLE 48 - Incomes of Family Heads, Resolute, 1964
Based on Housing Survey Conducted March, 1965

No. of Dependents	Wages (dollars)	Trapping (dollars)	Family Allowance (dollars)	Social Assistance (dollars)
10	1,300.00	780.00	400.00	-
4	3,500.00	50.00	320.00	-
5	750.00	1,500.00	144.00	-
3	400.00	1,000.00	144.00	-
1	-	-	96.00	115.00
0	900.00	1,400.00	-	-
0	-	-	-	800.00
4	1,400.00	400.00	224.00	-
7	3,000.00	100.00	450.00	-
2	3,200.00	-	72.00	-
3	1,050.00	324.00	144.00	202.31
4	2,500.00	100.00	225.00	-
4	300.00	400.00	240.00	-
4	900.00	100.00	300.00	-
4	1,000.00	1,000.00	240.00	-
6	3,500.00	300.00	400.00	-
2	2,500.00	50.00	-	-
4	4,000.00	500.00	220.00	-
0	2,000.00	100.00	300.00	-
4	3,400.00	300.00	172.00	-
TOTALS 71	35,600.00	8,404.00	4,091.00	1,117.31

During the course of the survey on which this report is based, information was gathered in respect to Eskimo incomes through individual interviews and examination of existing records. The various statistics indicate that Resolute Eskimos enjoy high incomes from various sources. The majority are not working at full capacity which appears to indicate they have arrived at an income level which they find to be satisfactory to their needs.

TABLE 49 - Work Record, Resolute Eskimos
with Tower Corporation, 1966

Sex	Age	Dependents	Period worked	Estimated Income (dollars)
M	50	5	All year	5,700.00
M	19	0	September until end of December	1,500.00
M	35	5	January to end of March	1,314.00
M	50	5	May to end of August All year	4,500.00
M	24	2	August to end October	1,125.00
M	21	0	One week February Two weeks June	234.00
F	20	0	November and December	240.00
M	22	0	Three days February Four days September	135.00
M	52	5	January, June to end of December	3,000.00
M	32	6	All year	5,700.00
M	20	0	2 weeks September	330.00
M	38	3	January to end of April 3 days in June September to end of December	2,030.00
M	44	12	March, April to December	
F	18	0	November to December	372.00
M	42	10	January and February	876.00
M	26	4	January, April to September	2,310.00
M	24	4	January to October	3,300.00
M	18	0	May to mid-August	990.00
M	27	4	July to September	660.00
M	24	5	January to end of September	2,640.00

(Continued)

TABLE 49 (continued)

Sex	Age	Dependents	Period worked	Estimated Income (dollars)
M	34	5	January to end of June September to December	2,370.00
M	50	6	February to April July to September one half of December	1,980.00
M	53	6	Two days February	39.00

TABLE 50 - Eskimo Employment and Income, Tower Corporation,
January 1967 to end of June 1967

Sex	Age	Dependents	Period worked	Income (dollars)
M	19	Nil	Full-time	2,148.00
M	51	5	Full-time	2,185.00
M	36	5	Two days	38.64
M	52	5	Full-time (R.C.A.F. and Tower)	2,648.00
M	37	7	Mid-March to end of June	1,153.00
M	34	5	Full-time (R.C.A.F. and Tower)	2,648.00
M	32	6	January February 6	850.00
M	38	3	Full-time	2,628.00
M	44	12	Full-time	2,782.00
M	27	4	Mid-March to end April	537.00
M	34	5	Full-time	2,148.00
M	50	6	Full-time	2,148.00
F	18	Nil	Full-time	1,944.00
F	20	1	Full-time	1,944.00
M	19	Nil	Mid-April to end of June	895.00
F	22	Nil	January to end of April	1,296.00
M	24	4	March to April	672.00
M	24	5	January to end of March	1,074.00
M	20	Nil	3 dyas in March	57.96
M	50	5	January, February	876.00

In July 1967, employment was increased by the addition of two Eskimos as general labourers.

Prevailing Rate and Casual Labour Incomes

Prevailing rate and casual labour opportunities in the Eskimo community through employment with D.I.A.N.D. have been secondary sources of income for the Resolute Eskimos. Some Eskimos prefer prevailing rate and casual employment since it is less regular and there are opportunities to go hunting in good weather.

TABLE 51 - D.I.A.N.D. Prevailing Rate and Casual Labour for Individual Eskimos at Resolute, 1946 to 1966 Inclusive

Age	1964 (dollars)	1965 (dollars)	1966 (dollars)	Age	1964 (dollars)	1965 (dollars)	1966 (dollars)
24	-	-	206.55	44	-	50.12	12.10
30	1,019.27	295.33	3,593.39	22	-	46.40	-
25	-	1,544.62	196.04	17	-	-	181.00
47	-	378.49	148.36	52	-	-	32.66
52	-	470.80	632.23	32	-	-	6.15
26	-	-	3.25	24	277.11	62.35	22.90
26	-	57.28	115.57	53	-	-	489.19
38	221.46	254.47	22.30	36	-	-	6.15
19	56.12	-	93.88	34	-	-	11.10
				20	-	660.43	-

The Department of Transport paid the following individual income to four Resolute Eskimos for sea-lift work in 1965: \$979.96; \$696.00; \$509.00; \$820.80.

TABLE 52 - D.I.A.N.D. Prevailing Rate and Casual Labour for Individuals at Resolute, January 1967 to June 1967

Jan. (dollars)	Feb. (dollars)	Mar. (dollars)	Apr. (dollars)	May (dollars)	June (dollars)	Total for Period (dollars)
4.10	-	-	-	-	-	4.10
22.55	-	-	-	-	-	22.55
267.94	401.02	476.02	445.74	-	791.33	2,382.75
-	12.13	-	-	-	-	12.13
-	-	-	28.70	-	-	28.70
-	-	-	49.20	3.28	4.10	56.58
-	14.35	-	-	-	-	14.35

Polar Bearskins

Polar bearskins retail at \$35.00 per foot at the Department of Transport base and the demand in 1968 exceeded the supply. The price of bearskins has increased rapidly during the past few years and now far exceeds the reported price of \$40.00 - \$60.00 in 1960.

The manager of the Resolute Co-operative is kept aware of white fox fur prices through information supplied by the co-operative section of the Industrial Division in Ottawa. The values of white fox fur were as follows: 1966-67, \$4.00 to \$15.00; 1967-68, \$9.00 to \$20.00. The pelts have been sold to base personnel at a 10 per cent mark-up, although there are plans to ship fox skins out to auction.

Muskox Horns

Eskimos hunting on Bathurst Island and elsewhere collect muskox horns from animals which have died. The horns are retailed at \$15.00 - \$20.00 a pair at the Department of Transport base. Caribou antlers are also sold at prices

of \$10.00 to \$15.00 a pair. An Eskimo hunting on Bathurst Island in the Bedford Bay area collected four sets of muskox horns during the last week of June, 1968. Poorer sets of horns are made into cribbage boards.

Arts and Crafts Resolute

Arts and crafts production at Resolute consists of two main categories, sealskin articles and soapstone carving. The production of arts and crafts varies from month to month with an emphasis on production during the spring months when hunting conditions are optimal.

TABLE 53 - Handicraft Products Sold the Resolute
Co-operative, September 1966

Sept.4, 1966	Price (dollars)	Sept.4, 1966	Price (dollars)
2 pairs slippers	12.00	1 walrus	12.00
1 caribou	10.00	1 owl	8.00
		1 pair slippers	10.00
		TOTAL	52.00
Sept.8,1966		Sept.8,1966	
1 pair slippers	6.00	1 man & walrus	36.00
1 pair slippers	6.00	TOTAL	48.00
Sept.12,1966		Sept.12,1966	
2 pairs slippers	12.00	1 man & whale	12.00
1 pair slippers	6.00	1 toque	4.50
1 walrus	12.00	2 carvings	18.00
1 man & spear	18.00	3 carvings	61.00
1 polar bear	11.00	1 belt	18.00
		1 carving	20.00
		TOTAL	192.50

One or two carvers have developed reputations at the base for skills in producing novelty items (caribou antlers mounted above a polar bear jawbone) etc. The general attitude of some arts and crafts producers is to charge what the traffic will bear on the theory there is a frequent turnover of personnel on the base. Many non-Eskimos with high incomes are not unwilling to pay high prices, and value carvings and other crafts on a price-basis rather than artistic merit.

TABLE 54 - Resolute Co-operative Handicraft Sales,
to December 1966*

Date	Items	Price (dollars)	Date	Items	Price (dollars)
Sept. 4, 1966	6	52.00	Nov. 10, 1966	38	207.00
Sept. 8	3	48.00	Nov. 10	25	181.00
Sept. 12	15	192.00	Nov. 25	20	262.00
Oct. 7	13	186.75	Dec.	47	245.00
Oct. 8	3	50.00	Dec.	9	88.00
Nov. 4	11	130.75	Dec.	17	159.00
			Dec.	12	115.00

*based on store records

Soapstone

No soapstone deposits have been located by the Eskimos in their extensive travels in the area. Soapstone is imported from Quebec for use by carvers. No soapstone was ordered by the Co-operative for shipment in 1967 and carvers were reduced to utilizing scraps of soapstone of earlier shipments. In 1967, four tons of soapstone were ordered by the Co-operative for delivery in 1968.

TABLE 55 - Incomes Derived from Supplementary Sources,
1966-1967*

Polar Bear (dollars)	Fox (dollars)	Carvings & Other Handicrafts (dollars)	Compensation (dollars)	Totals (dollars)
500	300-400	1,200	-	2,000.00
2,500	130	-	-	2,630.00
350	-	150	651.00	1,051.00
150	-	300	-	450.00
700	100	-	-	800.00
300	125	200	-	625.00
3,400	180	200	-	3,780.00
520	35	200	-	755.00
800	100	-	-	900.00
1,200	50	40	-	90.00
1,800	90	100	-	1,990.00

*Based on individual interviews

TABLE 56 - Estimated Incomes for Seventeen Family Units, All Sources, July 1966 to June 1967

Age	Dep.	Wages	Polar bear	Fox	Family Allowance	Handicrafts	Social Assistance Old Age Pension	Disability Compensation	Total
42	10	\$1,000.00	\$2,500.00	\$ 36.00	\$432.00	\$320.00	-	-	\$4,288.00
24	5	400.00	350.00	15.00	288.00	150.00	-	\$651.00	1,854.00
27	3	1,025.00	500.00	30.00	144.00	40.00	-	-	1,739.00
34	5	3,900.00	3,400.00		336.00	150.00	-	-	7,786.00
50	5	2,808.00	520.00	35.00	432.00	200.00	-	-	3,995.00
37	7	1,153.00	200.00	20.00	480.00	150.00	-	-	2,003.00
50	5	5,700.00	250.00		216.00	250.00	-	-	6,416.00
51	4	4,500.00	250.00		240.00	200.00	-	-	5,190.00
36	5	3,964.00	2,500.00	65.00	288.00	260.00	-	-	7,077.00
52	5	5,700.00	800.00		360.00	400.00	-	-	7,260.00
34	5	5,296.00	350.00	80.00	288.00	200.00	-	-	6,214.00
32	7	3,300.00	1,800.00	90.00	456.00	100.00	-	-	5,746.00
38	3	4,428.00	500.00		168.00	200.00	-	-	5,296.00
44	12	4,166.00	500.00		600.00	180.00	-	-	5,446.00
30	6	3,500.00	700.00	100.00	360.00	65.00	-	-	4,725.00
23	4	2,528.10	600.00		240.00	50.00	-	-	3,418.00
53	6	500.00	1,000.00	40.00	384.00	200.00	\$500.00	-	2,624.00

The following incomes were earned by unmarried individuals living within family units. There is no evidence to suggest this income is diverted to family use, the custom being for individuals to spend their incomes as they wish, but part of it indirectly enters the family economy in the form of gifts or shared foods.

TABLE 57 - Income Earned by Unmarried Adults Living at Home

Sex	Age	Dep.	Wages (dollars)	Polar bear (dollars)	Fox (dollars)
Female	22	0	1,600.00	-	-
"	20	1	1,944.00	-	-
"	18	0	324.00	-	-
Male	19	0	895.00	-	-
"	19	0	2,148.00	800.00	100.00
"	21	0	500.00	2,500.00	130.00
"	22	0	350.00	1,500.00	12.00

In addition there are three elderly females, aged 72, 65 and 60 respectively living with family units. They contribute indirectly to family income through old age pension and old age assistance payments and social assistance.

Part V - The Resource Base and Subsistence Economy

The Eskimos of Resolute have benefited from a mixed economy of wage employment and hunting and trapping. There is a relative abundance of game in the resource area and the Resolute Eskimos through wage employment have been able to purchase necessary equipment for the harvesting of resources.

Hunting and Trapping Equipment - Resolute, N.W.T.

In terms of hunting and trapping equipment, the Resolute Eskimos have to a certain extent solved the problem of full-time employment through the use of ski-doo. It is extremely difficult for a man with one day off a week to maintain a dogteam requiring large amounts of seal or walrus meat.

The hunters state that they require ski-doo in order to be able to compete with their neighbours, particularly in polar bear hunting where ski-doo equipped hunters can cover extremely large areas in a short period. With ski-doo, the hunters are able to make quick caribou hunting trips to the west, reaching Bathurst Island and returning in less than two days. Hunting trips are normally longer. The lack of time to devote to hunting is evident in the relatively low game returns which can be compared with those hunters hunting and trapping on a full-time basis. (See game takes for individual hunters in the Arctic Bay and Pond Inlet area).

Sealskins

The current low prices in sealskins is reflected in the Resolute Eskimos' attitudes towards sealskin production. The majority prefer to utilize sealskins for handicraft production rather than sell them. The returns are much larger. A pair of sealskin kamiks from a silver jar is valued at \$20.00 - \$25.00 as compared to the current prices of \$7.00 - \$8.00 a skin.

Equipment Owned by Resolute Eskimos 1961

The 1961 supplementary census gives some indication of the equipment owned by eleven Eskimos at that time:

Equipment

- | | |
|--|---|
| 1. 14 dogs, 10 H.P. motor, small canoe. | 6. 15 dogs, small canoe, share in whaleboat with another party. |
| 2. 35 foot cabin cruiser, inboard engine. | 7. No equipment listed. |
| 3. 10 H.P. motor. | 8. 5 dogs, share in whaleboat. |
| 4. 10 H.P. canoe, 30 foot boat inboard. | 9. 12 dogs, 10 H.P. motor and canoe. |
| 5. No equipment listed, uses father's equipment. | 10. No equipment listed |
| | 11. 3 dogs |

These listings, while incomplete in terms of total equipment, (i.e. guns and traps are omitted) may be compared with the equipment listed in 1967. In general, the types and quantities of equipment owned by individual hunters are comparable to those owned by Eskimos in other eastern Arctic communities.

TABLE 58 - Hunting and Trapping Equipment Owned by Resolute Eskimos at Resolute, 1967

Age	No. Dep.	Guns	Boats	Motors	Ski-doos	Dogs	Traps	F.N.	Bin.
27	4	.303 .222 .22	-	10 hp. E.	1 (1967)	10	7	1	2
37	7	.303 16 g.	-	-	1 (1967)	6	-	-	-
26	4	.303 .22 16 g.	-	-					
51	4	.303 .22 12 g.	-	-	1 (1963)	-	-	-	1
24	4	.303 .22 12 g.	-	-	1 (1966)	-	-	-	-
52	5	.303 .308 .22 16 g.	canoe	18 hp.	1	-	-	1	2
42	3	.303 16 g.	35 foot boat	6 cyl. gas	1	-	25	-	2
35	5	.303 30.06 .222	22 foot canoe	10 hp. E.	1	-	45	1 1	- 1
42	10	.303 .22 16 g.	22 foot canoe Home made Plywood Bt.	10 hp. E	1	3	36	1	1
53	6	.243	-	-	2	6	25	-	-
50	7	.308 .222(2) .22	-	15 hp.J.	1	-	40	-	1
(Continued)									

Note: F.N. - Fish net; E - Evinrude motor; J - Johnson motor; Bin - Binoculars

TABLE 58 (continued)

Age	No. Dep.	Guns	Boats	Motors	Ski-doo	Dogs	Traps	F.N.	Bin.
36	7	.308 .222	22 foot canoe	20 hp. Mercury	-	11	-	1 1	3
32	7	.303 12 g.	16 foot canoe	15 hp. J.	1 (1966)	-	20	1	1
34	5	.303 12 g. 16 g.	share of 5 Trap boat	35 hp.	-	-	-	-	-
34	5	.303 .22 .243	20 foot canoe	28 hp.	1	-	-	-	1
30	6	-	20 foot canoe 30 foot whaleboat	9 hp. Mercury no engine	1 (1965)	-	24	1	3
44	12	.222 .308 12 g.	-	-	1 (1967)	-	1	-	-
50	5	.308 12 g.	-	-	2	-	-	-	2
24	5	.308 12 g.	-	8 hp.	1	-	10	1	-
22	0	shares equipment with father			1	6	-	-	-

Due to the availability of wage employment, the Resolute Eskimos are able to purchase new equipment with greater ease than Eskimos living in settlements where employment is minimal. They can also afford to discard or give away equipment which has developed defects and accept catastrophes such as the loss of outboard motors or canoes in storms with greater ease than Eskimos dependent on the subsistence economy.

TABLE 59 - Sales of Hunting and Trapping Equipment,
Resolute, 1966-1967

Equipment	No. Sold	Price (dollars)
Traps	84	2.00 each
Outboard motors	1 (10) H.P.	507.00
Ski-doo	5	840.00
Gas	4,725 gal.	.85 cents a gal.

(Continued)

TABLE 59 (continued)

Equipment	No. Sold	Price (dollars)
Lubricating oil	30 quarts	.50 cents 1 pt. cans
Naphtha	675 gal.	.85 gal.
Coleman stoves	5	32.00 each
Coleman lamps	10	21.50
30.30 ammunition	2 cases	5.50 a box
.303 ammunition	5 cases	5.50 a box
.222 ammunition	5 cases	3.50 a box
12 gauge "	2 cases	4.80 a box
16 " "	2 cases	4.90 a box
Tent canvas	none	-
Fish nets or	"	-
Netting twine	"	-

The gas was also used for transportation between the base and the settlement. Guns and outboard motors are ordered individually or through the Co-operative until recently, ski-doo's were brought in from Edmonton on R.C.A.F. transports at a reduced cost.

Ski-doo Versus Dogs

There is little point in discussing the merits of dogteams versus ski-doo's in a wage oriented community like Resolute. For employed men working a six-day week accumulation of dogfood was an onerous burden.

Use of the Ski-doo

There has been a steady increase in the use of the ski-doo's. The following tabulation indicates annual increase in the number of ski-doo's compared to the decline in the use of dogteams:

Date	Dogteams	Ski-doo's	Date	Dogteams	Ski-doo's
1961-1962	14	-	1964-1965	9	10
1962-1963	12	-	1965-1966	4	15
1963-1964	9	5	1966-1967	3	18

The decline in the number of dogteams was precipitated by a number of factors. Many of the active hunters were also employed at the base and as soon as they found ski-doo's could be used extensively over long distances they disposed of their dogteams which required large amounts of dogfood and required continued hunting. Employment provided the necessary funds for purchasing ski-doo's. They received assistance from mechanics at the base in maintaining their ski-doo's and parts could be quickly obtained on the regular flights.

The Hunting Population at Resolute

The number of full-time hunters is small at Resolute for a number of reasons.

The income from hunting and trapping is unsatisfactory despite the high prices realized in recent years from sale of polar bearskins. Wage employment is available either in permanent form or as a casual form.

The following data was made available by one hunter in regard to ski-doo utilization:

1st year	Value(dollars)	3rd year	Value(dollars)
7 polar bears	\$1,000	9 polar bears	\$2,000
25 foxes	375	17 foxes	136
	\$1,375		\$2,136
2nd year	Value(dollars)	4th year	Value(dollars)
8 polar bears	\$1,100	11 polar bears	\$2,500
15 foxes	225	30 foxes	360
	\$1,325		\$2,860

Ski-doo operation may be summarized as follows: total cash returns over 4 years, \$7,696; total cost of ski-doo operation, \$3,544; net income 4 year period, \$4,152; average income per year, \$1,038.

In addition, the ski-doo was extensively used in hunting caribou and seal which were utilized for food and clothing requirements. The material presented here indicates substantial costs in operating a ski-doo. The high prices realized from exporting polar bearskins to outside markets appear to have offered some economy in the operation. The Resolute Eskimos have some difficulty in adequately maintaining ski-does. The Co-operative does not stock ski-doo parts and owners are obliged to order these from the south. Use of ski-does in rough ice or on gravel and at frequently high speeds with heavy loads results in damage to the machines. One Eskimo has three ski-does (10 hp., 14 hp., 16 hp.). Two do not work at all and the newest, a 16 hp. is in a constant state of breakdown.

The hunters have manifested an interest in an adult education course in ski-doo maintenance. One man has also manifested an interest in setting up a small repair shop. There would be some advantage in having a repair and parts shop at Resolute due to increased numbers of ski-does at Pond Inlet (28) and Arctic Bay (10). Hunters at Pond Inlet and Arctic Bay are forced to wait much longer for parts from the south due to the bi-monthly schedule from Resolute. The requirements could be met at Resolute. This would provide a supplementary source of revenue for one man working in his spare time.

Geographical Knowledge

The Resolute Eskimos have travelled extensively in the Barrow Strait area. Their knowledge of the northern and northwestern part of Bathurst Island, or Grinnell Peninsula on northwestern Devon Island is limited. They are familiar with the Peel Channel area, Wellington Channel and have travelled along the south Devon Coast to Dundas Harbour.

Two individuals have been employed by oil exploration crews and have visited Mould Bay, Isachsen. Others have been casually employed by Polar Continental Shelf, Canadian Wildlife Service or Energy Mines and Resources. The extent of their geographical knowledge is best illustrated on the accompanying map. Some, who have originated in Pond Inlet and Arctic Bay, have a more extensive experience and are familiar with the Igloolik and Clyde River areas. No ready distinction can be made between Pond, Arctic or Port Harrison Eskimos in use or knowledge of the resource base.

Essentially, the Eskimos are familiar with the coastal zones rather than inland areas except where valley systems and coincident lake and river systems offer a thoroughfare across peninsulas or islands in the winter and spring. Due to ice conditions, currents and high winds in August, boat travel is limited to the immediate settlement zone. More extended boat trips are made in search of caribou and fish in late August and in September before the new ice forms. These boat trips take place in the McDougall Sound area. Occasional canoe trips are made across Barrow Strait to the north coast of Somerset Island during periods of calm weather.

From March until the end of May travel conditions are suitable for extended ski-doo hunting trips across Barrow Strait and into Jones Sound and west to the south coast of Bathurst Island. In 1968, travel into Peel Sound continued until the last week of June into early July. Hunting becomes a man and wife affair in June with younger children being left behind with other children and elders in the community. In June, small plywood skiffs are carried on the komatik to assist in crossing leads (ayora) and to keep materials dry while crossing melt pools and leads.

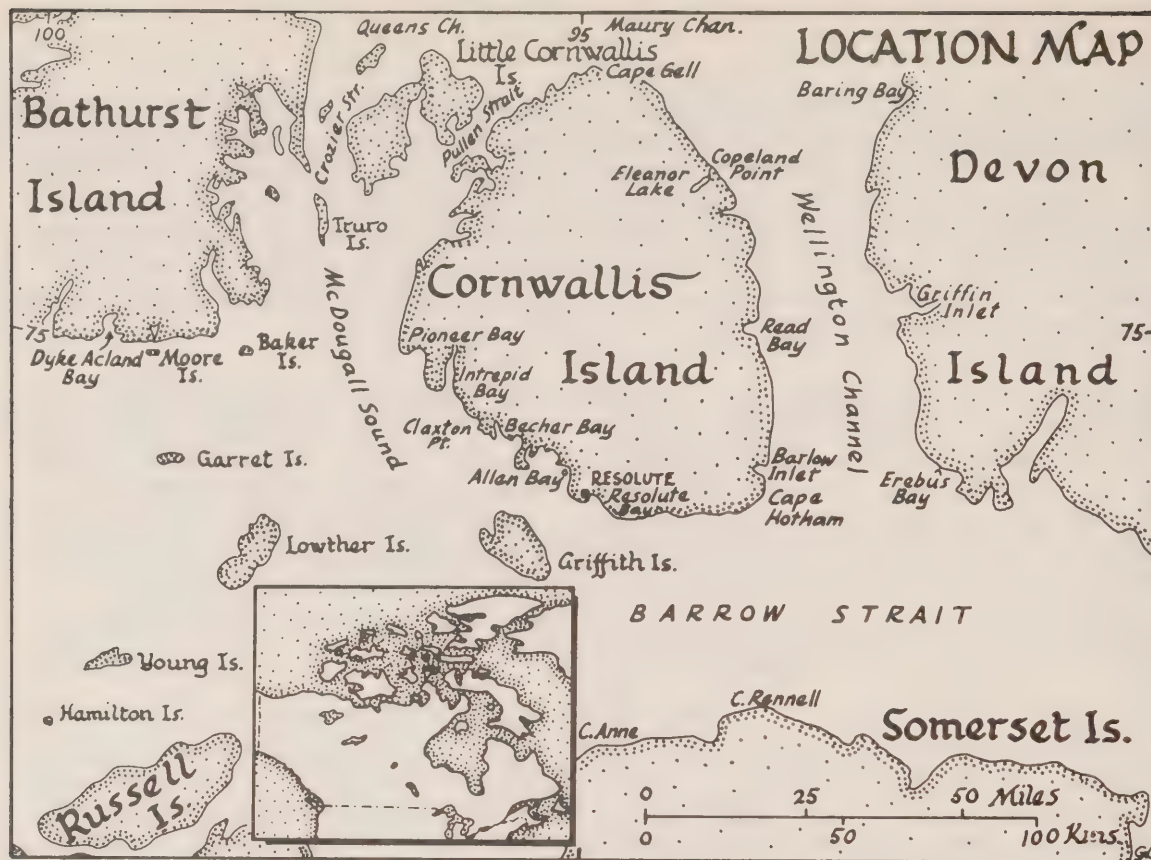
Toponymy

The Eskimos have applied names to various geographical features within the known hunting zone and these have been recorded on maps. The majority of names are topographical in terminology.

Conflict with Resource Utilization Zones of Other Eskimo Groups

Some overlapping of resource utilization zones occurs particularly with respect to polar bear hunting. By polar bear hunting in West Fiord, the Resolute Eskimos are utilizing part of the resource zone of the less affluent Grise Fiord Eskimos who have little or no paid employment. This is passively resented by the Grise Fiord Eskimos. No hunting took place in this area in 1967-68 due to the low quota.

The Peel Sound area was formerly hunted by the Arctic Bay Eskimos who now concentrate their polar bear hunting activities in the Prince Regent Sound area. The small Eskimo population on Somerset Island and in the Bellot Strait, Brentford Bay area live in relatively rich resource areas and the infrequent excursions of Resolute Eskimos into these areas do not affect the sea mammal resource base. Utilization of outlying sectors of the resource zone occurs in the spring months.



The Dark Period

There is a drop-off in hunting activities during the dark period although two hunters made a successful caribou hunting trip to Little Cornwallis and the east side of Bathurst Island during the first part of December, 1967 and a fishing expedition by ski-doo was carried out to Eleanor Lake during November. Both were trips of some distance.

There is a general decline in morale particularly among the Port Harrison Eskimos. Outbreaks of heavy drinking and fighting have a tendency to increase during this period and the people sleep for longer periods. A community celebration marks the return of the sun. The Pond Inlet and Arctic Bay Eskimos also complain about the dark period but to a lesser extent than the Port Harrison settlers. The writer has noted a sense of depression among Eskimos in other Arctic areas with a decline in daylight and the onset of winter. The darkness and intense cold also affect non-Eskimos.

Expenditures on Gas on Extended Ski-doo Trips

Each of the hunters takes 20 gallons of gas on ski-doo trips to the Bedford Bay, Dyke Acland Bay area. This area can be reached in one day. Twenty gallons is considered sufficient to reach the fishing lake in the Peel Sound area on the west coast of Somerset Island. This lake can be reached in ten hours of steady travel but stops for hunting and tea-breaks are made along the way.

Sharing of Country Food

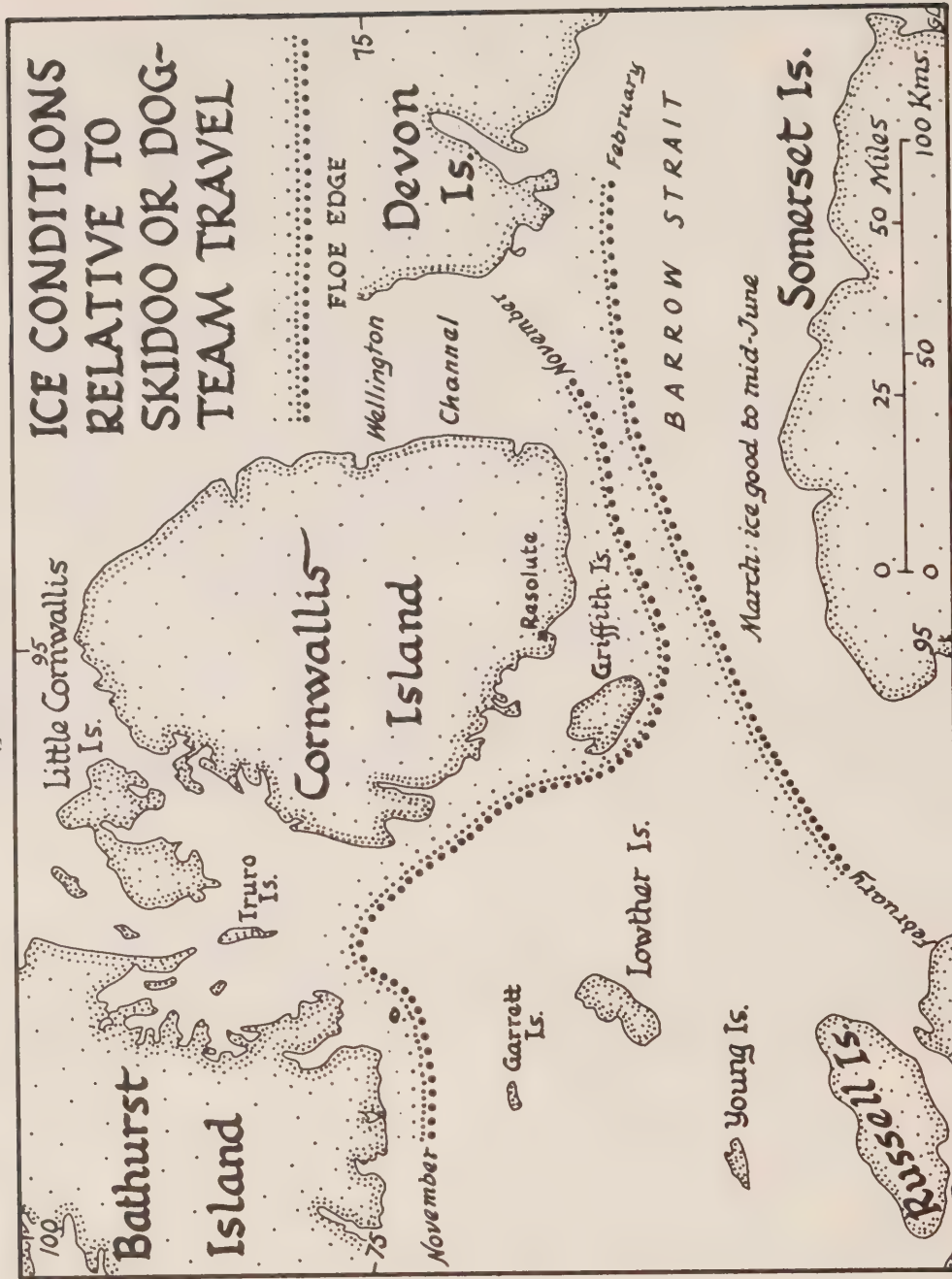
There is an almost universal sharing of country food and little distinction could be observed between Eskimo groups at Resolute. Caribou and fish are the major items which are shared since ringed seals are readily available off the settlement area and employed hunters can usually secure their requirements.

Ice Conditions in Relation to Hunting

In October, ice begins to form in bays and around islands. Winds and currents delay the freeze-up of Barrow Strait. The hunters can seal hunt his new ice areas in Allen Bay and along the shore of Cornwallis Island. The sea-ice forms in McDougall Sound in late October and November and by mid-November ice has extended to Griffith Island southwest to Resolute. In November, it is still impossible for caribou hunters to travel directly northwest to Baker Island and southeast Bathurst. Hunters move northwest to Pioneer Bay and follow a trail curving northward across the new ice of McDougall Sound reaching Truro Island and Lacy Point. By mid-December they are able to travel directly northwest across the sea-ice to Bathurst Island.

In February, ice has formed from the southwest corner of Devon Island, southwest to Russell Island and the east coast of Prince of Wales Island. Freeze-up of Barrow Strait is complete in March and from the end of March hunters are able to cross directly from Resolute Somerset Island and Devon Island. Ice conditions are the limiting factor in bear hunting. In the spring, Eskimos avoid travelling north of Little Cornwallis in the Queens Channel area and north of Maury Channel in the Bailie Island area due to poor and uncertain ice conditions.

Figure 21 - Ice Conditions Relative to Ski-doo or Dogteam Travel



By the latter part of June, extensive melt-water pools have formed on the sea, the ayora have widened and extended travel away from land on the sea-ice has ceased. Coastal travel for seal hunting or fishing trips is still possible until the end of the first week of July. During the middle and latter parts of July, short hunts occur from the settlements.

Some indication of the relative productivity of hunting during the open-water season may be obtained from the game take figure supplied by a hunter for a four day boat trip in August, 1966. The boat trip was made from Resolute through McDougall Strait to the Pullen Strait area along the north-western sector of Cornwallis Island. The game take was the following: 11 caribou secured on islands, 2 white whales, 5 walrus, 2 udjuk or bearded seal, 8 ringed seals, 15 eider-ducks.

The same hunter spent four months June to September 1965, with his family and another family unit in the McDougall Sound area of southeast Bathurst Island. The total game take for the two families (13 people) amounted to: 57 caribou, 15 udjuk or bearded seal, 50 ringed seals, 10 Arctic hares, 1 polar bear. These figures give some indication of the amount of game taken by hunters hunting full-time in an area of game abundance. Both families used dogteams and small boats for transportation. There is evidence of more extended use of ski-doo's into late spring months and increased participation of women on extended hunting trips in June. The Eskimos are now using their ski-doo's into late June when melt-water pools have become extensive. In the first week of July, 1968 four hunters made a four day trip to Eleanor Lake to fish for char. This trip did not involve any crossings of wide channels of poor ice. The Eskimos had stopped going to Bathurst Island and the west and northwest coast of Cornwallis Island due to deteriorating ice.

Variations in Hunting Patterns

The hunting patterns for ringed seal are affected by variations in daylight. Older hunters will take seal during the dark period, but younger hunters prefer to hunt in the latter part of January during the period of half light between 10 o'clock and 4 o'clock. Hunting for caribou and polar bear ceases during the dark period. Polar bear hunting requires ski-doo travel in rough ice and there is a danger of accidents. Also the lack of light requires slower travelling speeds and provides the bear with a greater opportunity to escape. Caribou are sensitive to sound in the dark period and cannot be approached easily and shooting tends to be random. The factor of intense cold is a deterrent to long distance hunts. Ski-doo's become less functional except for short trips.

Diurnal variations are less noticeable in the spring and summer but there is a tendency to hunt in the evening to escape the heat of the day. This is particularly true when dogs are being used for transportation. In wage employment oriented settlements like Resolute, evening hunts are standard practice after working hours.

The Port Harrison Eskimos brought kayaks with them from Port Harrison. These fell from use with the acquisition of money through working at the base for the purchase of boats and canoes. Informants have reported that kayaks were unsatisfactory in the early stages of settlement due to an abundance of walrus in the area and a lack of small islands offering some protection from

the wind. By 1958, the kayak had disappeared as a means of transportation in hunting during the open-water season. The sealskin avatuk has been replaced by ten-gallon drums. The niutang or drag is not in use.

Scopes are popular among the Resolute Eskimos. The Port Harrison settlers have shotguns but these are not as important as in the Port Harrison area where there are large migrations of geese. Pond Inlet Eskimos have acquired shotguns as well. These are used in hunting ducks and murre.

Figure 22 - Composite Map of Eskimo Camps and Extended Travel Routes

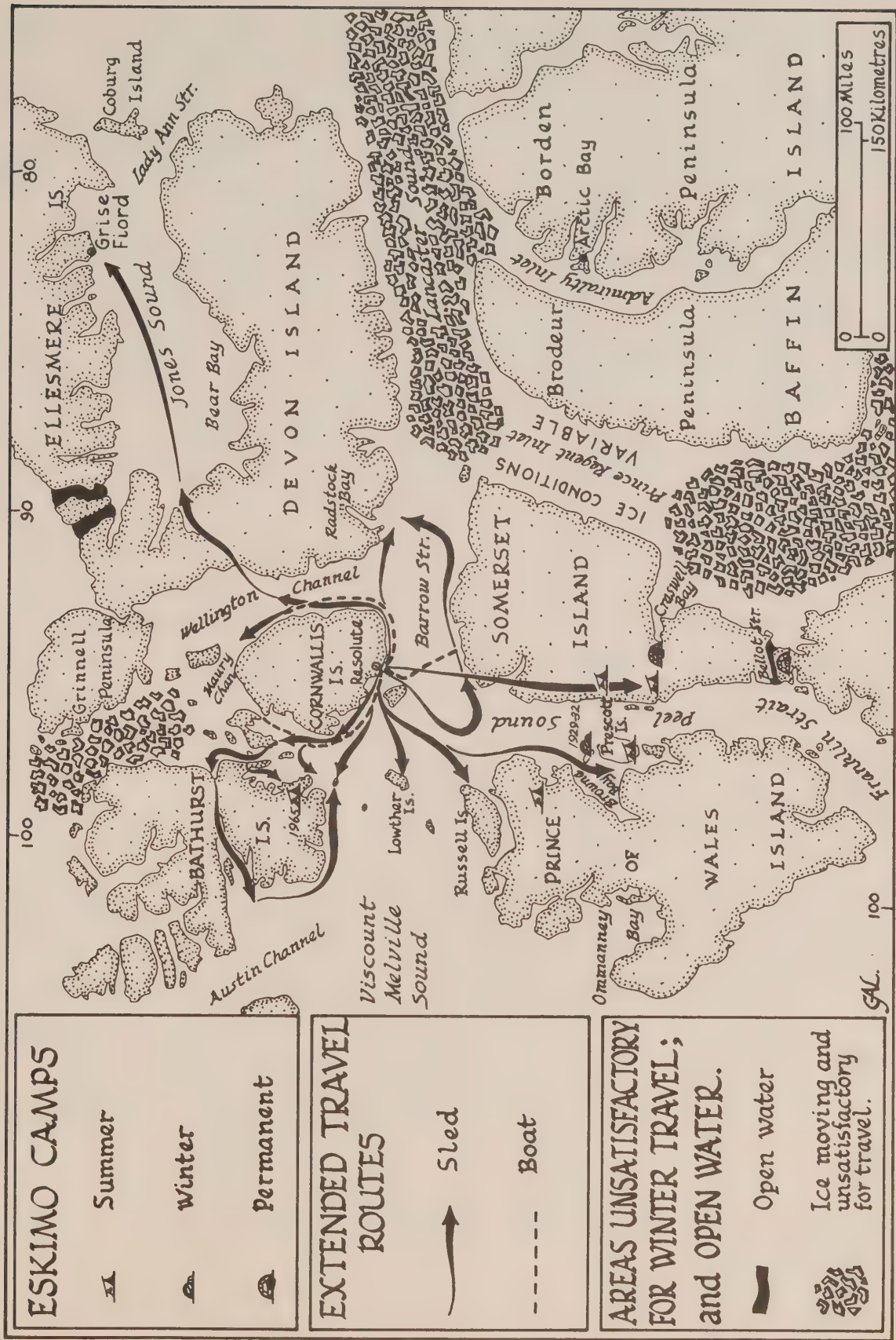


TABLE 60 - Major Species of Game and Fur Animals of Economic Importance to Eskimos of Resolute

Species	Ringed seal	Bearded seal	Harp seal	Walrus
Availability	Year-round	Seasonal summer, autumn	Seasonal summer	Seasonal
Live-weight (lbs.)	118	500 to 600	300	M, 2,000 F, 1,250
Age, Sex maturity	7-yr. M 5-7 yr.F	7-yr.M 6-yr.F	8-yr. M 6-yr. F	6-yr.M 5-yr.F
Mating period	Feb.- Mar.	May	Mid-May	Jan. - early March
Number of young	1	1	1	1
Birth period	Mid-March Mid-April	April-May	Late Feb., early March	April early May
Food	Themisto libellula, planktonic amphipods, polar cod	Molluscs, Echinoderms, tube worms, large prawns	Euphasid, Amphipods, polar cod, herring, haddock	clams, whelks, sea cucumbers, shrimps, sea- worms
Predators (other than man)	killer whale, polar bear	killer whale, polar bear	polar bear, killer whale	occasional polar bear, killer whale
Gregarious	-	-	Yes	Yes
Non-gregarious	found in clusters in spring on ice	Yes	-	-

(Continued)

TABLE 60 (continued)

Species	Beluga	Arctic fox	Peary caribou	Polar bear
Availability	Seasonal	Winter	Seasonal	Seasonal
Live-weight (lbs.)	1,000 average	7 to 15		800
Age, Sex maturity	not known	5 to 6 months	1½-yr. M 1½, 2½, 3½-yr. F	4-yr. M 3-yr. F
Mating period	July	Feb. - March	October	April
Number of young	1	4 - 7	1	1 - 3
Birth period	-	June	Late May June	Jan. - Feb.
Food	crustacea, polar cod, Arctic char, capelin	lemmings, birds, eggs	lichens, mosses, sedges	seals, occasional young walrus
Predators (other than man)	killer whale	wolves, Arctic owls	wolves,	-
Gregarious	Yes	-	Yes	-
Non-gregarious	-	Yes	-	-

Note: Not all species bear young each year. The walrus, beluga and polar bear produce young at two year intervals.

TABLE 61 - Seasonal Availability of Game According to Resolute Eskimos

Month	Polar bear	Caribou	Seals Netserk Ringed seal	Udjuk Bearded seal	Kairoluk Harp seal
Jan.	Not available	Only occasionally	All year round	Not available	Not available
Feb.	Start about end of Feb.	" "	" " "	" "	" "
Mar.	Good	Good	Very good	" "	" "
Apr.	"	"	" "	" "	" "
May	"	Good but not many	" "	Sometimes on ice	" "
June	Not available	In 1967 shot for first time	Good	Starting to be available	" " scarce

(Continued)

TABLE 61 (continued)

Month	Polar bear	Caribou	Seals Netserk Ringed seal	Udjuk Bearded seal	Kairoluk Harp seal
Jul.	Not available	Not available	In open-water not so good	Best	Seen but hard to shoot in open-water
Aug.	"	"	In open-water not good. Ice forming at night	"	Very fast still seen
Sept.	"	Use canoe before ice start	Ice fully formed end Sept.	Not available	Not available
Oct.	Start	Good, when ice formed is best	Good	"	"
Nov.	Yes when sun still up	Good still	Shoot in dark - very necessary	"	"
Dec.	Nil. Stop when sun goes down	Occasionally		"	"

(Continued)

TABLE 61 (continued)

Month	Aivik Walrus	White Fox	Fish	Birds	Eggs and berries	Whale
Jan.	Not available	Good	Not available	Not available	Not available	Not available
Feb.	"	Best	"	"	"	"
March	"	"	"	"	"	"
April	"	"	" ice too thick	"	"	"
May	"	Not available	Possible start	"	"	"
June	"	"	Best	Good starting to nest	Some eggs	"
July	When ice breaks up	"	Best take in nets	Best	"	"
Aug.	Late July and Aug. many seen	"	"	Good	Not available	"
Sept.	Not available	"	Good when ice forming	Good on way south		Lots of white whale
Oct.	"	"	Good only if many fish	Not available		Note: frozen and stored
Nov.	"	Start	Not available	"		Not available
Dec.	"	Good	"	"		"

Several Comments by Eskimo Hunters

Caribou - It is possible to get all the caribou needed except when the sun is down. They can be taken in May with some effort.

Aivik (Walrus) - Heading west and following in 1953 and 1954 the aivik (walrus) were so numerous and noisy that an Eskimo who had observed this movement of walrus reported that he was unable to sleep. Now only a few are found in open-water.

Eggs and berries - Some egg parties consume the eggs as they are gathered.

Whale - Not declining but staying offshore in the vicinity of Resolute.

Availability of Game as Viewed by Eskimo Hunters in the Resolute Area

The preceding descriptive table of the availability of food species in the Resolute area is based on interviews with experienced hunters. Recently, there have been modifications in the hunting season, particularly for caribou, as hunters have found they can prolong the season ski-doo hunting until the latter part of June.

Game Takes

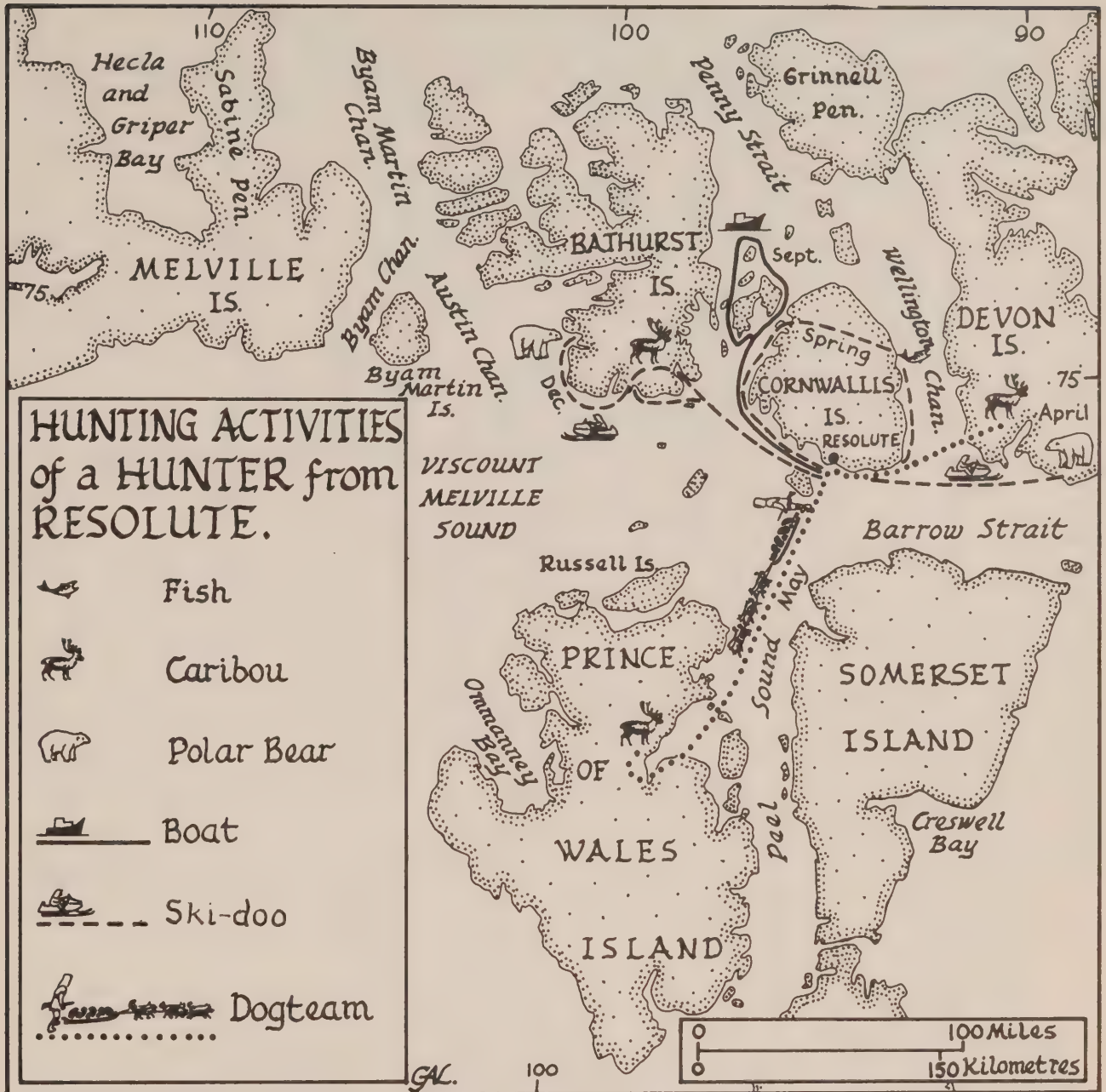
Data is available to show the variance in game takes for the period 1958 to 1967. For the purposes of compiling data, the game season extends from the first of July of one year to the end of June of the following year.

TABLE 62 - Game Returns of Eskimos at Resolute, 1958 to 1966 Inclusive

Game	1958-59	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66
Polar bear	58	62	47	51	49	60	92	53
Caribou	42	65	77	95	43	67	108	98
Ringed seal	270	300	385	413	573	657	670	300
Bearded seal	42	30	20	19	17	17	24	15
Harp seal	taken but not recorded			-	-	-	-	-
Walrus	37	15	8	13	14	16	16	10
Beluga	77	94	92	98	46	26	3	3
Geese	-	-	-	6	2	-	5	-
Ducks	476	35	72	106	54	67	84	104
Ptarmigan	150	75	218	84	39	52	86	55
Hare	taken but not recorded			-	-	-	-	6
Wolf	-	1	-	1	-	-	-	-
Fox	723	50	280	378	40	328	405	200
Blue fox	-	-	2	4	-	-	-	-

Source: R.C.M.P. Game Reports

Figure 23 - Major Hunting Activities of a Hunter from Resolute, 1966



Individual Game Takes

Interviews were carried out with individual hunters to determine the number of animals taken in the 1966-67 season and to gain information on the principal hunting areas.

TABLE 63 - Game Takes by Individual Eskimos at Resolute,
July 1966 to June 1967 Inclusive

Age of Hunter	No. of Depndts.	Polar Bear	Caribou	Ringed Seal	Harp Seal	Bearded Seal	Beluga	Walrus	Geese	Ducks	Sea Pigeons	Ptarmigan	Hare	Char	Fox
26	3	15	8	20	-	1	-	-	-	20	-	-	-	some	4
50	7	1	4	1	unable to hunt due to illness										
32	7	9	1	5	-	1	-	1	-	2	-	-	-	-	10
22	-	15	2	35	-	1	2	2	-	22	25	-	2	-	13
17	0	4	1	10	-	1	2	-	-	20	12	-	-	-	8
44	11	1	2	8	-	1	-	-	-	10	2	-	-	50	1
24	4	2	9	20	1	-	-	-	-	-	-	-	-	-	15
34	5	17	13	20	-	4	-	-	-	50	-	10	10	2	-
34	5	1	6	15	2	3	2	-	-	7	-	9	-	-	8
30	6	4	11	26	-	4	2	5	-	40	-	-	-	-	7
50	5	3	6	2	-	1	1	-	-	6	-	10	-	50	3
52	8	2	4	22	1	15	7	-	-	-	-	-	-	-	38
52	10	11	8	30	-	1	-	-	-	-	-	-	-	-	30
35	-	8	10	25	1	-	-	-	-	-	-	7	-	64	2
47	7	1	5	10	-	-	-	-	-	-	-	-	-	many	3
26	3	-	16	-	-	3	-	1	-	-	40	-	-	many	-
23	4	2	-	10	-	-	-	-	-	-	6	6	1	many	-
52	6	4	8	4	-	-	-	1	-	-	-	-	-	-	-
38	3	-	-	-	-	-	-	-	-	-	-	-	-	5	3
60	2	2	2	15	-	-	-	-	-	1	1	-	1	-	4
53	4	6	2	7	-	1	-	-	-	-	-	-	-	many	4
36	5	11	13	16	3	-	-	-	-	-	-	-	-	-	6

Comparative Game Takes

Comparative game takes are included for hunters living at Hall Beach, N.W.T. As can be seen from the statistics, larger numbers of caribou and walrus were taken by the Hall Beach hunters. Polar bear are scarce in the area.

Unlike the Resolute Eskimos, the Hall Beach hunters are primarily dependent on the returns of hunting and trapping although in recent years there have been increased opportunities for casual employment in construction programs and the Federal Electric Company.

TABLE 64 - Game Take of Individual Hunters as Recorded from Interviews for the 1966-1967 Season

Hunter	Caribou	Walrus	Seal	Bearded Seal	Polar Bear	Fox
X	6	5	26	10	-	2
X ^H	3	-	9	3	-	1 ^H
X	22	19	9	6	-	6
X	36	-	35	-	-	15
X	12	3	7	3	-	9
X	18	-	1	-	-	3
X	36	3	1	15	-	2
X	11	3	19	-	-	25
X	1	-	2	-	-	-
X	7	2	1	1	-	-
X	2	15	-	-	-	1
X ^H	5	6	11	2	-	1 ^H
X	2	4	-	4	-	6
X	23	6	29	12	1	8
X	14	9	8	-	-	1
X	36	8	40	-	1	13
X	2	-	4	-	-	-
X	30	1	6	8	-	3
X	16	5	3	-	-	22
X	1	-	-	-	-	-
X	42	2	32	1	-	-
X	14	5	9	6	-	54
X	2	3	-	2	-	2
X	1	2	8	-	-	-

X^H Employed as a school janitor

X^H Employed as H.B.Co. clerk

The Trapping Economy - Resolute

The following table indicates the fur harvest from the Resolute area from 1949-1967. The major fur resource has been polar bear and white fox, both in terms of quantities taken and value per pelt. Blue fox, red, ermine and wolf have been insignificant in the economy. Polar bear have been the major income source closely followed by white fox in good years. In recent years, the high price for polar bearskins, \$26.00 - \$35.00 a foot, has placed polar bear hunting in the fore-front as an income producer. This however will be drastically reduced through lower quotas.

TABLE 65 - Trapping Returns at Resolute, 1949 to 1967

Year	Polar Bear	Blue Fox	Red Fox	White Fox	Ermine	Wolf
1949-1950	5	4	-	7	-	-
1950-1951	13	1	1	18	-	4
1951-1952	4	1	-	26	-	1
1952-1953	43	12	-	725	34	-
1953-1954	-	-	no record available		-	-
1954-1955	36	7	-	602	-	1
1955-1956	44	2	-	544	-	-
1956-1957	23	7	-	367	6	-
1957-1958	15	9	-	610	3	-
1958-1959	58	-	-	723	-	-
1959-1960	62	-	-	50	-	1
1960-1961	47	2	-	280	-	-
1961-1962	51	4	2	478	6	1
1962-1963	42	-	-	40	-	-
1963-1964	60	1	-	328	-	2
1964-1965	92	-	-	405	1	-
1965-1966	53	-	-	200	-	-
1966-1967	124	6	-	166	-	-

Interest and time spent in trapping is affected by wage employment. From employment data over the past two years - employment reaches a peak during the winter months. During the spring months there is a tendency for interest in employment to slacken off. April and May are periods when hunting conditions are comparatively easy due to weather and ice conditions.

Trapping Area

The main trapping area extends from southeast Cornwallis Island to the south coast of Bathurst Island. Both Griffith and Lowther Island are trapped.

Some trappers operate alone while others trap together. Group trapping consists of two or three men travelling on ski-doo's. The men are relatives or friends.

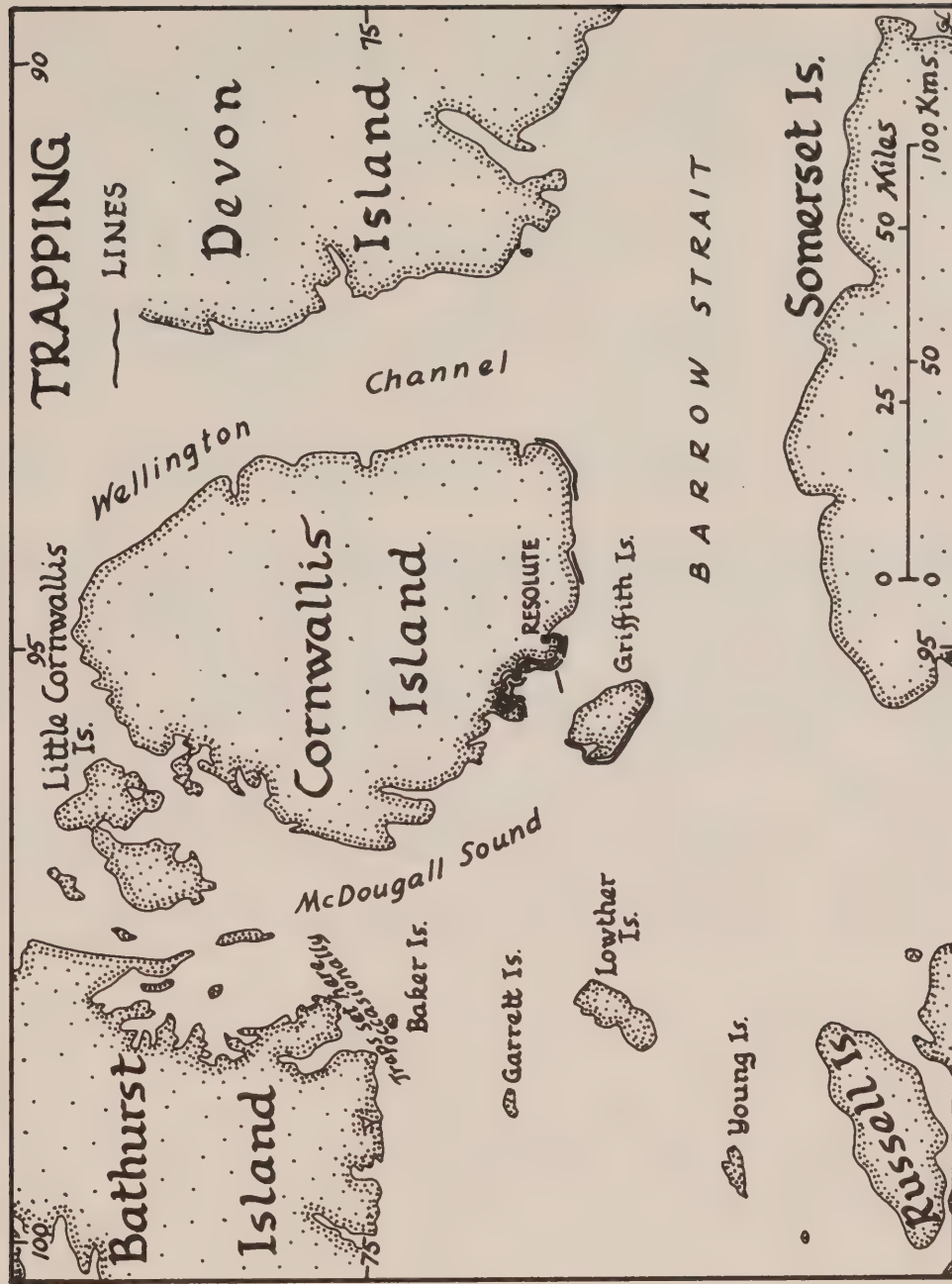
Trapping is a coastal operation with no attempts being made to trap inland areas. The majority of trappers operate on a twenty-five mile radius of Resolute. The number of traps owned by individual trappers ranges from a low of seven traps to a high of 45 traps. Seven men owned no traps in 1966-67 and consequently did not trap.

Factors Affecting the Low Fox Returns

Three factors affect low fox returns: involvement of men in wage employment; low returns from trapping in comparison to polar bear hunting; and fluctuations in the fox cycle.

A part of the fox catch is sold at the base where good prices can usually be obtained regardless of the grade of skin. The remainder are sold at the Co-operative at established prices.

Figure 24 - Trapping Lines, Winter, 1966-1967



Income from Fox Trapping as Reported by Individual Trappers

<u>Take of Individual Trappers</u>	<u>Income (dollars)</u>
10 foxes	90.00
13 "	130.00
15 "	180.00 (Co-op)
7 "	100.00
3 "	35.00
38 "	3-400.00 (estimated)
30 "	360.00
4 "	40.00

In 1966-67, the fox takes listed above were better than those experienced by many of the Arctic Bay and Pond Inlet trappers.

In the Resolute area, mid-January to the middle of April are considered to be the best trapping months. The trapping season starts in mid-November and lasts until mid-April. The Eskimos report there is a general movement of fox from west to east. The map showing traplines, 1967-68, indicates the resource area is being under-utilized in terms of trapping. The readily accessible sectors of the south Bathurst Island coast are unexploited as are large areas along the coast of Cornwallis Island. Distance and travelling conditions do not constitute the major factors for limited trapping efforts.

In 1967, there was some discussion among the Eskimos about erecting a trail cabin on southeast Bathurst Island. This received some support from the Area Administrator but no action was taken. A trail cabin on Bathurst Island would provide some convenience for hunters and trappers, but it is unlikely to increase trapping efforts due to the involvement of a large percentage of the population in employment.

Canadian Wildlife Service studies at Resolute and in the District of Keewatin, Northwest Territories indicate that a large cohort is produced in a good lemming year, and that few fox cubs enter the population in a poor lemming year.¹ Weaned litter counts vary directly with lemming numbers as determined by trapping; mean litter size was 9.7 cubs in 1960, 4.6 in 1961 and zero in 1962; associated mid-summer lemming indices were 85, 57 and 13 respectively. A comparison of placental scar incidence between age groups suggests that the Arctic fox conserves a large part of its reproductive potential until the next lemming peak.

Successful trapping seasons follow lemming peaks due to maximal cub survival and all the survivors of the dominant cohort have attained reproductive capacity.

Principal Polar Bear Hunting Areas

The following are areas where bear hunting is intensively carried out.

Zones Hunted

Bathurst Island Area

Goodsir Inlet and Cornwallis Island on the northeast, southwest to Cape Cockburn.

¹ Macpherson, A. 1965, p.32, 33.

Barrow Strait

Garret Island, Lowther Island, Griffith Island, Young Island

Wellington Channel Area

Cape Dungeness to Cape Eardley William on South Devon Island

Somerset Island

McLure Bay in Peel Sound east to Garnier Bay

Prince of Wales Island

Browne Bay, Prescott Island to Drake Bay on the West (including Russell Island)

Jones Sound Area

West Flord, western coastal areas of Jones Sound

Intervening areas are also hunted but are less productive. Ski-doo hunting over the past three years appears to have affected bear distribution patterns and Eskimos now normally travel thirty to fifty miles from the settlement. Prior to 1967-68 the hunters travelled directly east from Resolute on bear hunts, but they now cross to Somerset Island keeping an eye out for tracks off the Somerset coasts and if tracks are sighted heading east, they follow these and then cross north over to the southwest corner of Devon Island. In late December, January and February bears remain close to land hunting seal. In March and April, the bears move into pressure-ice areas. The Eskimos follow the bears into pressure-ice areas on ski-does and by dogteams. With ski-does, Eskimos run the bears to complete exhaustion if necessary and then shoot them.

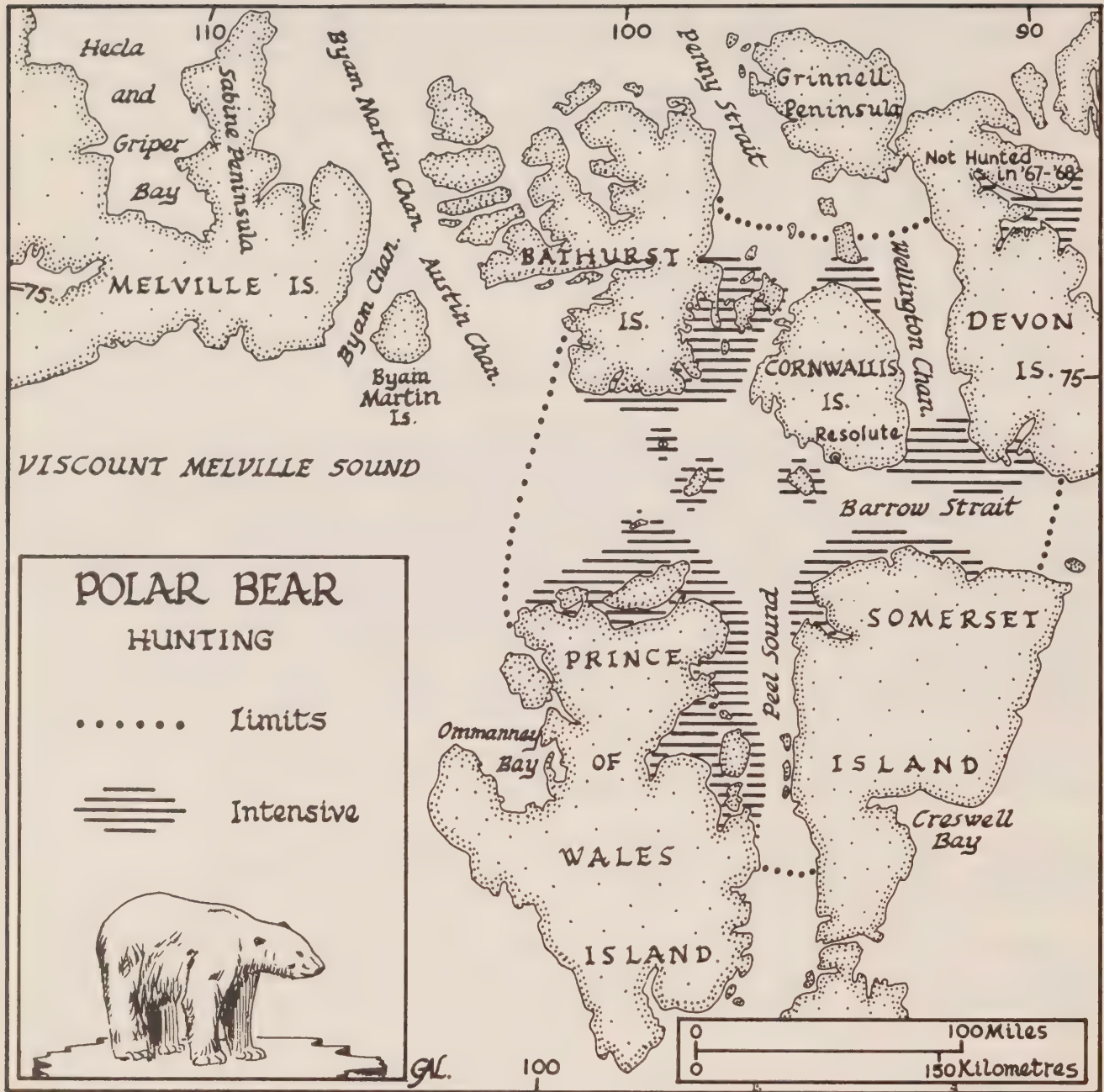
No major denning areas have been reported by the Eskimos. Single dens have been located in the Allen Bay area and on Lowther Island.

As with other sea mammals, the diminution of dogteams has affected utilization patterns. Only a few choice portions of the kill are retrieved and the remainder is left on the ice.

Data is insufficient to speculate on the position of the Resolute area as a breeding zone for polar bear or the distance over which bears move. It seems likely that numbers move with the break-up and drift of ice eastward into Lancaster Sound and Baffin Bay.

In recent years the kill of polar bear by Resolute Eskimos has far exceeded that of other hunting areas in the Canadian Arctic. This higher kill has been due in part to ice conditions which permit extensive use of ski-does. The majority of bear kills occur in late winter, February, March and during the spring months, April and May. By June, the pelts are beginning to yellow and become rubbed. There is a complete cessation of bear hunting during December and January due to difficulties of travel under severe cold and darkness. "Occurrence" kills may occur close to the settlement but this has decreased in recent years.

Figure 25 - Polar Bear Hunting Areas



Polar Bear Kill 1964-65 Showing Monthly Kill Variation

Month	Number
October	16
November	-
December	-
January	-
February	9
March	9
April	19
May	37
June	2
TOTAL:	92

Age-Range of Kills and Number of Bears

The majority of bears killed were in the adult group as follows: 35 bears in the 2 to 3-year-old age group, followed by 34 bears in the 4-year or over groups. Twenty-three bears were found to be in the 14 to 18-month age group.

In a location such as Resolute, there are certain pressures evident for production of polar bearskins in excess of the quota. While fur export permits are required, some skins find their way south in the possession of buyers unaware of the necessity of having a permit. There is virtually unlimited market for all the skins that can be produced due to the traffic through Resolute, and some system is required for marking the skin with the hunter's name to discourage an overkill of bears.¹ There are two hunters at Resolute who are quick to ignore quotas if alternatives can be found. One of the individuals in the village is reported by others to have killed twenty-four bears in 1966-67 while he in fact reported taking only eleven. He also took immature bears below the prescribed age limit.²

The Quota System

A quota system was introduced in 1967-68 based on the bear kill over the previous three years. A kill of 40 was made available to the Resolute Eskimos and in a meeting in September 1967, they decided on allotments to individual hunters. Hunters, who for reasons of employment were unable to take their quota, gave some of their animals to other hunters chiefly relatives or close friends.

¹

A tag system was instituted in 1968 for the 1968-69 season.

²

A case of caribou meat being sold by Eskimos at the base and exported to Montreal occurred in the spring of 1968.

TABLE 66 - Polar Bear Quotas Assigned to Various Arctic Settlements

Locations	Average kill during 3 past years	Suggested Quota
Grise Fiord	22	17
Resolute	68	50
Pond Inlet	11	9
Arctic Bay	13	10
Cape Christian	50	15
Igloolik	27	23
Spence Bay	26	23

In September 1967, the Resolute hunters met and decided on the distribution of the quota among individual hunters.

TABLE 67 - Comparison of Polar Bear Kill with Quota, 1966-1967

Hunter	1966-67 kill number taken	Estimated Value (dollars)	1967-68 Allocation Quota
Andrew	11	2,500	1
Thomassie	6	1,000	1
Tongalok	2	500	1
Idlout	4	800	2
Mossessie	2	600	2
Isaac	1	200	1
Levi	11	2,500	2
Johnie	2	5 - 600	1
Joalamie	6	1,200	0
Sudlavenik	3	520	2
Paniloo	4	700	1
Jackoosie	1	800	2
Simonie	17	3,400	2
Pudluk	2	350	2
Kudloo	1	500	2
George	13	2,500	2
Allie	4	800	2
Jaybeddie	9	1,800	0
Alex	1	250	0
Oingoot	15	3,000	2
Ikaksak	8	1,500	1
Manuk ^x	0		1

^x(Moved Resolute from Cresswell Bay spring of 1967 did not hunt in 1967.)

Figure 26 - Examples of Polar Bear Kill Locations, 1967-1968



TABLE 68 - Polar Bearskins Traded at the Resolute
Co-operative Store, January 1965 to June 1967

Month	Hunter No. Revenue		Hunter No. Revenue		Hunter No. Revenue		Hunter No. Revenue		Hunter No. Revenue		No.	Revenue
Jan. 1965	1	198.00	2	208.00		-		-	3	473.00		-
Apr. 1965	1	230.00		-		-	1	202.00		-	3	522.00
May 1965	4	1,820.00	2	195.00		-		-		-	3	500.00
June 1965	2	246.15		-		-		-	2	228.30		-
July 1965		-		-	1	174.50		-		-		-
Oct and		-		-		-		-		-	2	386.00
Nov. 1965		-		-		-		-		-		-
Apr. 1966	4	1,093.00		-		-		-		-	1	247.50
May 1966		-	2	516.00		-		-		-		-
June 1966		-		-		-		-		-		-
July 1966		-	3	708.00		-	4	750.00		-	1	260.00
Aug. 1966		-		-		-		-		-		-
Feb. 1967	3	594.00		-		-		-		-		-
June 1967		-	4	108.50		-		-	2	355.00	6	1,565.00
Jan. 1965		-		-		-		-		-		-
Apr. 1965		-		-	1	220.00	2	410.00	1	150.00		-
May 1965		-		-		-		-		-		-
June 1965		-	1	80.00		-	2	242.10	3	625.00		-
July 1965		-	1	101.75		-		-	3	341.00		-
Oct. and		-		-		-		-		-		-
Nov. 1965		-		-		-		-		-		-
Apr. 1966		-		-		-		-		-		-
May 1966		-		-		-		-	2	630.00		-
June 1966		-		-		-	3	759.00		-		-
July 1966		-		-		-		-		-		-
Aug. 1966	1	211.00		-		-		-		-		-
Aug. 1966		-	1	200.00		-		-		-		-
Feb. 1967		-		-		-		-		-		-
June 1967		-		-		-		-		-		-
Jan. 1965		-		-		-		-		-		-
April "	1	260.00		-		-	3	659.00		-		-
May 1965		-		-		-		-		-		-
June 1965	1	236.00		-	2	338.00		-	2	288.00		-
July 1965		-		-		-		-	2	347.35		-
Oct and		-		-		-		-		-		-
Nov. 1965		-		-		-		-		-		-
April 1966		-		-		-		-	4	805.00		-
May 1966	1	193.00	2	378.00		-		-	2	629.00		-
June 1966	1	255.00		-		-		-		-		-
July 1966		-		-		-		-		-		-
Aug. 1966		-		-		-		-		-		-
Feb. 1967		-		-		-		-		-		-
June 1967		-		-		-		-	6	1,560.00		-

(Continued)

TABLE 68 (continued)

Month	Hunter No. Revenue		Hunter No. Revenue		Hunter No. Revenue	
Jan. 1965	-	-	-	-	-	-
Apr. 1965	-	-	2	450.00	-	-
May 1965	-	-	3	630.00	-	-
June 1965	1	170.00	-	-	-	-
July 1965	-	-	-	-	4	728.85
Oct. and	-	-	-	-	-	-
Nov. 1965	-	-	-	-	1	97.20
Apr. 1966	3	780.00	-	-	-	-
May 1966	1	328.50	-	-	-	-
June 1966	-	-	3	866.00	-	-
July 1966	-	-	1	200.00	2	350.00
Aug. 1966	-	-	-	-	-	-
Feb. 1967	-	-	-	-	-	-
June 1967	2	470.00	-	-	-	-

Note: Lengths are available for twenty-nine of the polar bearskins. Four of the bearskins were five feet indicating immature bear. Eight bearskins were seven feet. Five bearskins were eight feet in length. There were seven skins that measured nine feet. Only five skins were ten feet in length.

As can be seen from the 1966-67 take and the statistics above, a severe income loss resulted from the introduction of a quota for hunters. This was partially overcome by a price rise from \$26.00 to \$30.00 and \$35.00 per foot.

While the Resolute Eskimos appear to have followed the 1967-68 polar bear quota, many are still unaware of the real need for quotas. Also, a considerable amount of confusion arose from discussions with non-Eskimos, in 1967, about the use of ski-doo's in hunting. The process has been simply to follow the bear until it is exhausted from the chase and then kill it at close range.

A syllabic pamphlet would clarify many points which have been misunderstood by Eskimos.

Canadian Wildlife Service

An Eskimo hunter at Resolute receives \$5.00 for each bear from which specimens are collected and shipped to the Canadian Wildlife Service in Ottawa. In June 1968, he reported having partially completed specimen collection from seven polar bears. Resolute appears to offer considerable advantage in the institution of a tagging program similar to those carried out in Alaska and at Churchill, Manitoba.

The Arctic Unit, Department of Fisheries has also been successful in having specimen collections of seals by Eskimo hunters in the Broughton Island, Home Bay area and of walrus in Foxe Basin on Melville Peninsula.

Trade in Polar Bearskins - Resolute Co-operative Store

Table 68 indicates the number of polar bears traded at the Co-operative store in Resolute. Those traded in June, July and August are skins taken during the spring months rather than the results of hunting during the summer. The lag in time between kills and turn-ins results from time expended in cleaning and stretching the skins and the fact that employed hunters are less pressed for income than full-time hunters and trappers. In a number of cases, the length of the bearskins was indicated.

Peary Caribou (Rangifer tarandus pearyi)

Rangifer tarandus pearyi is a smaller caribou than rangifer tarandus groenlandicus. Banfield (1961, p.60) gives some indication of the weights for peary caribou: one adult male specimen 110 kg; adult female specimen 52.6 kg. The pearyi caribou is distributed in varying numbers throughout the Queen Elizabeth Islands including Banks, northwestern Victoria, Prince of Wales and Somerset Islands. Integrades of pearyi and groenlandicus have been secured along the southern perimeter of its range in the Bellot Strait area. Caribou on north Baffin are groenlandicus with no available evidence to suggest integradation.

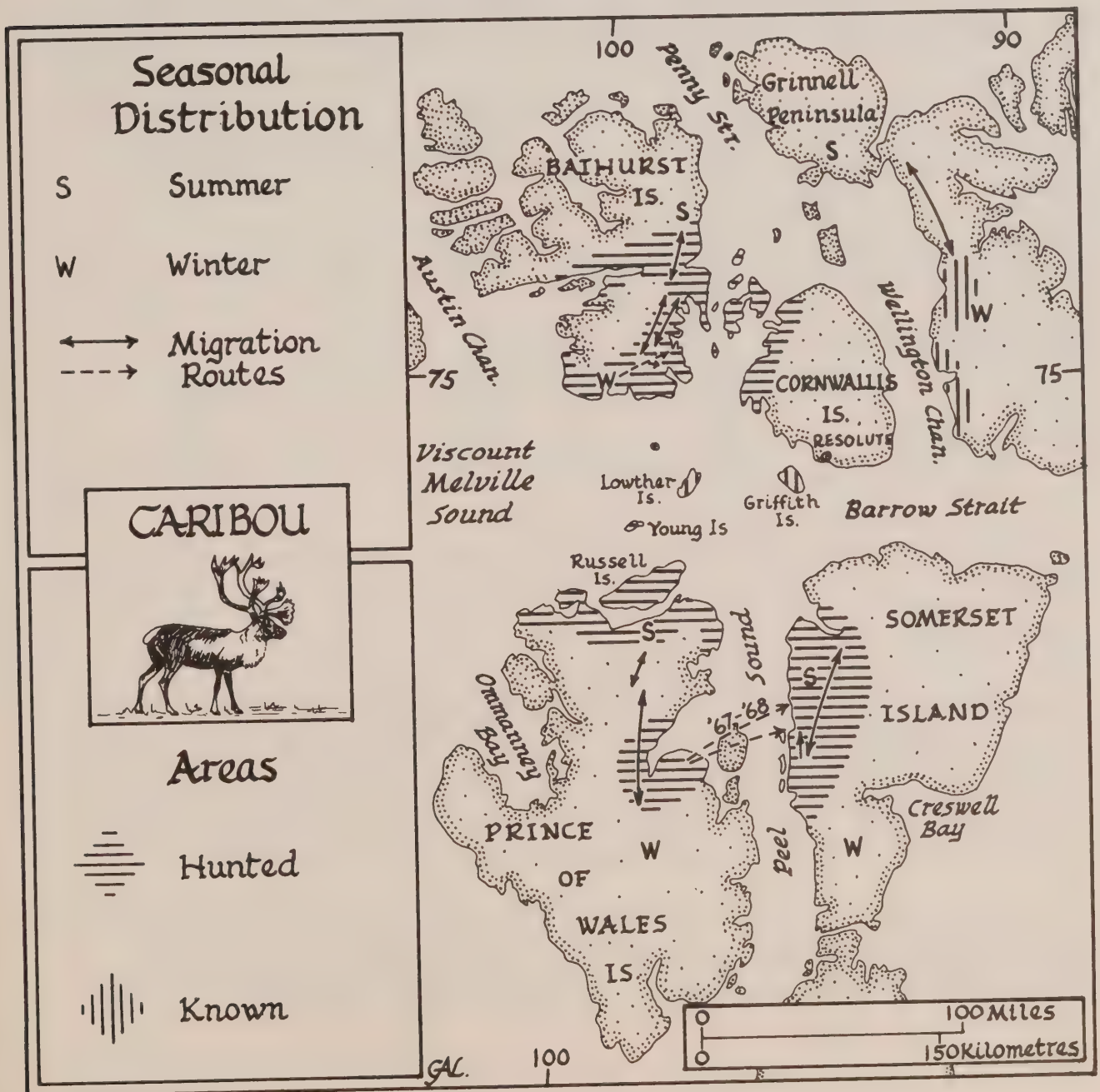
The Prince of Wales Island population is larger than typical pearyi from caribou to those of Bathurst of Cornwallis Island as being larger animals generally in superior condition.

Some population estimates are available as follows:¹

Melville Island	-	3,000	Prince of Wales	-	500 (1959)
Prince Patrick	-	1,300	Banks	-	4,000 (1958)
Emerald	-	400	Ellesmere	-	500
Mackenzie King	-	900	Lougheed	-	300
Borden	-	1,200 (1959)	Cornwallis	-	25

¹Banfield, A., 1963, p.62

Figure 27 - Seasonal Distribution of Caribou



In 1961, an aerial survey of the Queen Elizabeth Islands conducted by the Canadian Wildlife Service indicated an estimated peary caribou population of 25,845. A large population was counted on Bathurst Island, the major hunting ground of the Resolute hunters.

Low yearling counts were a cause of some concern to wildlife experts. The low yearling count may have been due to a number of factors such as a difficulty in distinguishing age classes, poor survival rates of the 1960 calf crop, etc.

TABLE 69 - Provisional Total of Caribou Populations and Observed Structures, Queen Elizabeth Islands, N.W.T., 1961

Island	Estimated caribou population	Observed calf (per cent)	Observed yearling (per cent)
Devon	150 ^H	-	-
Cornwallis	43 ^H	-	-
Bathurst	3,565	19.84	3.50
Melville	12,799	19.01	4.28
Prince Patrick	2,254	20.29	5.79
Eglinton	204	-	-
Emerald	161 ^H	-	-
Borden	1,630	22.0	2.0
Mackenzie King	2,192	21.6	1.8
Brock	190 ^H	-	-
Ellef Ringnes	114 ^H	-	-
Amund Ringnes	452 ^H	-	-
Lougheed	1,325	22.1	5.8
Cornwall	266	29.7 ^H	0 ^H
Axel Heiberg	300	14.3 ^H	4.76 ^H
Ellesmere	200	10.8 ^H	8.1 ^H
TOTAL	25,845		

^HFew data

Caribou Movements

In general, there is a northward movement of caribou in the spring. The caribou of Bathurst Island move northeastward from the Dyke Acland Bay and Allison Inlet areas toward Goodsir Inlet. In terms of physiography, this represents a movement from a dissected plateau and lowland area to a ridged upland zone. The caribou on Prince of Wales Island move north in the spring from the lowland area to the plateau. The caribou on Somerset Island are reported to calve in the northwest sector in the vicinity of Aston Bay.

Caribou are frequently encountered on smaller islands throughout the area, having crossed on the sea-ice. The distance between Bathurst and Little Cornwallis Island across Crozier Strait is short but Lowther Island is well removed from other islands and caribou have been killed on the island.

Caribou Hunting

The following areas are used for caribou hunting and are tabulated below in order of importance:

Area	Distance	Period
South Bathurst Island Baker Island to Cape Cockburn	61 mi.	Autumn, spring
Somerset Island Aston Bay area - Northwest of Stanwell Fletcher Lake	125 mi.	spring
Prince of Wales Island Browne Bay area	117 mi.	spring
Little Cornwallis Island and Pullen Strait area	61 mi.	summer, late August and early September boat hunts.

The Resolute hunters do not make regular caribou hunts on Devon Island but have made trips in this direction. Caribou are scarce on the island.

In the summers of 1966-67, boat trips were made to the McDougall Sound and Pullen Strait areas for caribou. These were single boat trips made by hunters to take caribou and did not involve the total hunting community.

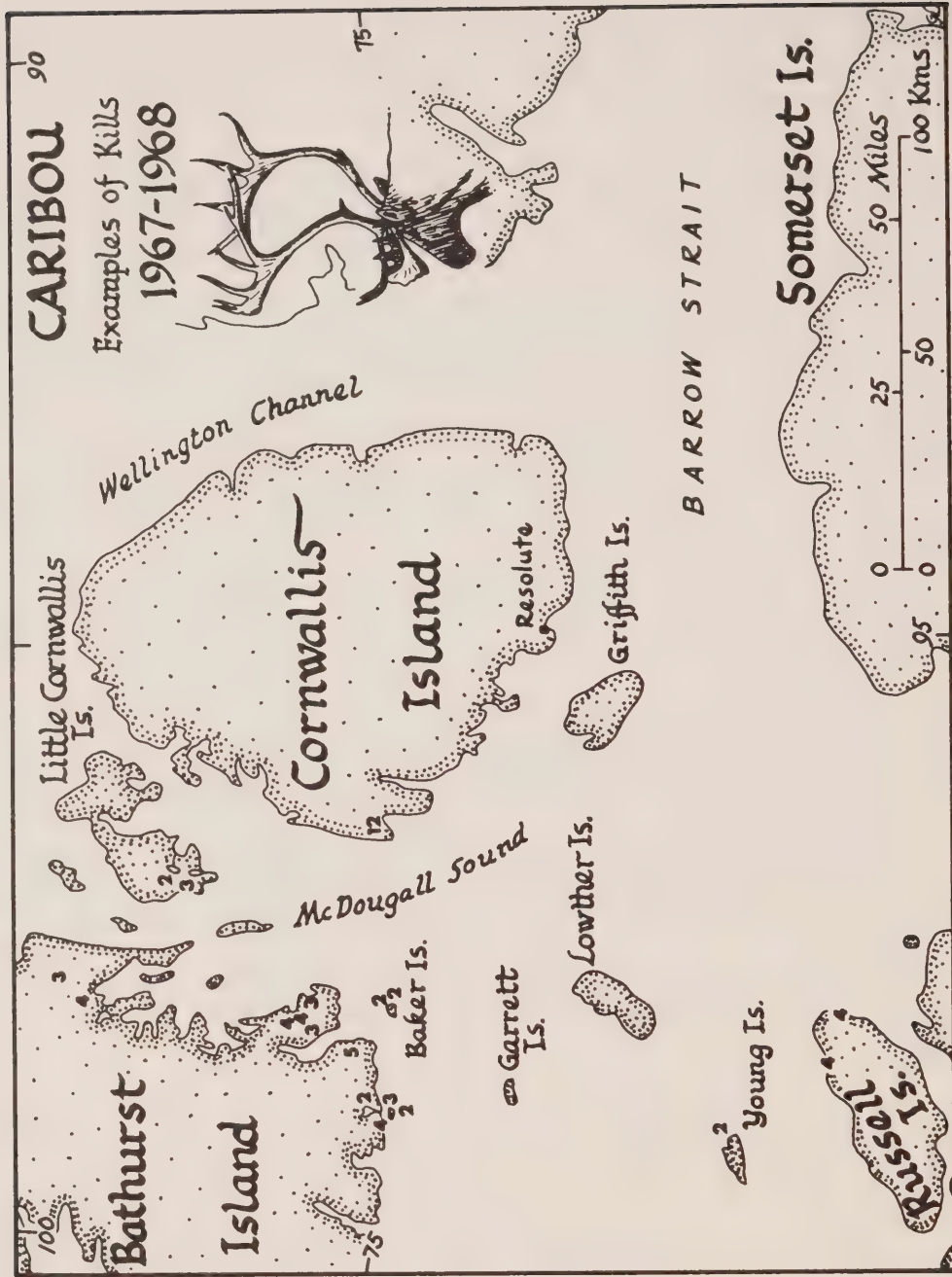
The caribou hunts on Bathurst and Somerset Islands can be combined with fishing for char in May and June. On Somerset Island, lesser Canada geese are also taken in June.

The normal ski-doo load is 6 to 7 caribou and this is a limiting factor in the number killed. Also the lack of large herds is another limiting factor. The majority of caribou are taken close to the sea-ice or open-water in summer to avoid long distance packing. Animals of both sexes and all age classes are taken on caribou hunts. Various estimates have been given by Resolute Eskimos on requirements for caribou meat. One man estimated that an adult caribou would provide food for a week for two adults and three children. Another estimated that he would like to take 10 per year but could not do so due to working. The total annual caribou kill of the Resolute Eskimos does not meet the meat requirements in terms of this species. However, it appears to be close to the 10 per cent estimated permissible take by the Canadian Wildlife Service.

Caribou Movements on West Devon Island

The majority of caribou skins are collected in the spring months when the length of hair reduces the suitability of the skin for clothing except in the production of socks or mitts for trail use. The skins can also be used for

Figure 28 - Examples of Caribou Kills by Location
and Number, 1967-1968



sleeping skins for trail use. The decline in caribou skin clothing contrasts strongly with the utilization of caribou skins by the Kooganaiyu Eskimos who are able to harvest summer skins adequate for winter hunting and travel.

TABLE 70 - Examples of Caribou Kills by Season and Location
August 1967 to July 1, 1968

Number Killed	Month or Season	Location
5	March	Bedford Bay Area S.E. Bathurst Island
4	December	East Bathurst Island south of Goodsir Inlet
4	February	Russell Island
4	Late June	Freeman Cove, McDougall Sound Area, Bathurst Island
4	Late June	Baker Island
12	Late August early September	Pioneer Bay, Cornwallis Island
4	February	Freeman Cove, Bathurst Island
2	Early December	S.W. Corner Little Cornwallis Island
3	Early December	Freeman Cove Area, S.E. Bathurst Island
3	Late November	Moore Island
5	March	Freeman Cove, McDougall Sound, Bathurst Island
4	Late November	McDougall Sound Area, S.E. Bathurst Island
1	March	West side of Somerset Island
1	June	West side of Somerset Island
3	July 2	Bedford Bay Area, South Bathurst Island
2	March	Parker Island

(Continued)

TABLE 70 (continued)

Number Killed	Month or Season	Location
2	March	Young Island
4	March	Russell Island
8	May	West side of Somerset Island*
3	May	West side of Somerset Island*

*West side of Somerset Island pertains to area between Four Rivers Bay on the south and Aston Bay on the north

Concentrations of Muskoxen and Caribou in Winter

When heavy drifting occurs in upland areas with a tendency for depressions with better forage conditions to be covered in deep snow muskoxen and caribou move into coastal area where winds off the ice tend to keep the grazing areas less snow covered. The mortality rate from heavy snowfalls appears to be less among caribou. This may be due to a greater mobility in moving to available grazing areas during periods of heavy snowfall.

Hunters regularly secure caribou on Baker and Moore Islands off the south-east coast of Bathurst Island in the late winter and spring.

Ice-Cracks (used in seal hunting)

In the Resolute area, the ice-cracks known to the Eskimos are the following:

1. Between Claxton Point, Southwest Cornwallis Island and Lowther Island.
2. Between Sheringham Point and Dobell Point on Griffith Island.
3. Between Cheyne Point on Griffith Island to the Prospects Hills area on south Cornwallis Island.
4. Between Cheyne Point on Griffith Island and Cape Anne on north Somerset Island.
5. Between Lowther Island and Russell Island.
6. Between Garret Island and Young Island.
7. In the Wellington Channel area between Cape Hotham on Cornwallis Island and Innes Point on Devon Island.
8. Between Cape Dungeness on south Cornwallis and Cape Rennell on north Somerset Island.

The ice-cracks having the greatest significance in terms of ice hunting for seals are the Sheringham, Dobell Point crack and the Cheyne Point, Prospects Hills crack since these are readily accessible to hunters from the community. The other ice-cracks are less important in terms of ice hunting for seal but are good polar bear hunting zones. Polar bear hunt seals extensively in the ice-crack area. The Eskimos are aware of this and hunt polar bear in these areas.

Ringed Seal(Phoca hispida)

The ringed seal is common in the marine resource zone. There is a considerable variance in the hunting area used by the Resolute Eskimos. On extended ski-doo and dogteam trips seals are taken over a wide zone extending from southeast Bathurst Island east to southwestern Devon Island and south to Somerset and Prince of Wales Islands. During the open-water season, ringed seals are harvested in conjunction with extended boat trips in the McDougall Sound and Pullen Strait areas as well as on trips to Eleanor Lake in the Wellington Channel area. In winter, the seal hunting zone contracts to the immediate ice area off the settlement. Maulirtuk sealing, or hunting seals at snow covered air-holes in winter, is carried out most frequently along the ice-crack between Grittith Island and Cornwallis Island. Some hunters still use the indicator, while others do not.

Seals are hunted with a variety of methods according to the season. On extended ski-doo and dogteam trips in the spring, seals are stalked and shot while basking on the ice or swimming in the ice-cracks. In late spring the Resolute hunters make trips to the floe-edge which is approaching from the east and hunt seals by small boat or canoe from the floe-edge. During the open-water period, seals are shot from boats and canoes.

Due to hard packed snow and the relative scarcity of pupping areas, the Resolute Eskimos do not actively hunt young seals in the birthing dens in April. The resource area is also considered to be a poor zone for silver jar seals in comparison to Admiralty Inlet or Eclipse Sound.

Attempts have been made to net seals in the vicinity of Cape Dungeness and in Allen Bay but strong currents render this practise difficult according to the Eskimos. A decline in the number of dogteams has contributed to a lack of interest in seal netting.

Open seal hole hunting as practised by Pond Inlet and Arctic Bay Eskimos in late spring has been carried out both in the Allen Bay area and east of Griffith Island. The Port Harrison Eskimos show little interest in open seal hole hunting and this method is losing favor among the Pond Inlet and Arctic Bay Eskimos living at Resolute. This is an alternative method to hunting basking seals. The cotton shield is used in hunting basking seals on the ice.

Hunting seals by boat in open-water is relatively inefficient due to losses from sinking of dead and wounded seals. In September hunting improves as wounded and dead seals float for longer periods due to accumulations of blubber and can be more easily retrieved. There is a movement of seals into small bays and one hunter reported taking 92 seals in Resolute Bay in one week of hunting in September.

Bearded Seal or Udjuk

The Resolute Eskimos have reported that bearded seals are found during the winter using aglus or air-holes in the Cape Capel area of southeast Bathurst Island. The Port Harrison Eskimos report that bearded seals have aglus in the Grise Fiord and Port Harrison areas as well. Aglus or air-holes appear to be formed in areas of relatively thin-ice and appear to be similar to the aglus formed by walrus. Currents resulting in thin-ice areas in the vicinity of Cape Capel probably account for the presence of bearded seals in the winter. The majority of bearded seals are taken in late May and June during periods when they are hauled out on the ice. Others are taken during the open-water boating period. The main zone for hunting this species, is in Allen Bay and McDougall Sound.

Harp Seals (Phoca groenlandica)

Harp seals appear from the east moving through Lancaster Sound and Barrow Strait with the retreat of the ice. Harp seals form a minor resource due to short term availability in summer months. As elsewhere, the Eskimos take few of this species due to the speed of the animal and the high loss through sinking. There is a build-up of animals in late July and August. Harp seals move into Wellington Channel and McDougall Sound. By late August and early September, they are beginning to move eastward out of the area.

Unfortunately, statistics for harp seals have not been recorded over a period of years. In 1966-67, only four hunters of a total of twenty-three hunters reported taking a total of 14 harp seals.

Walrus (Odobenus rosmarus)

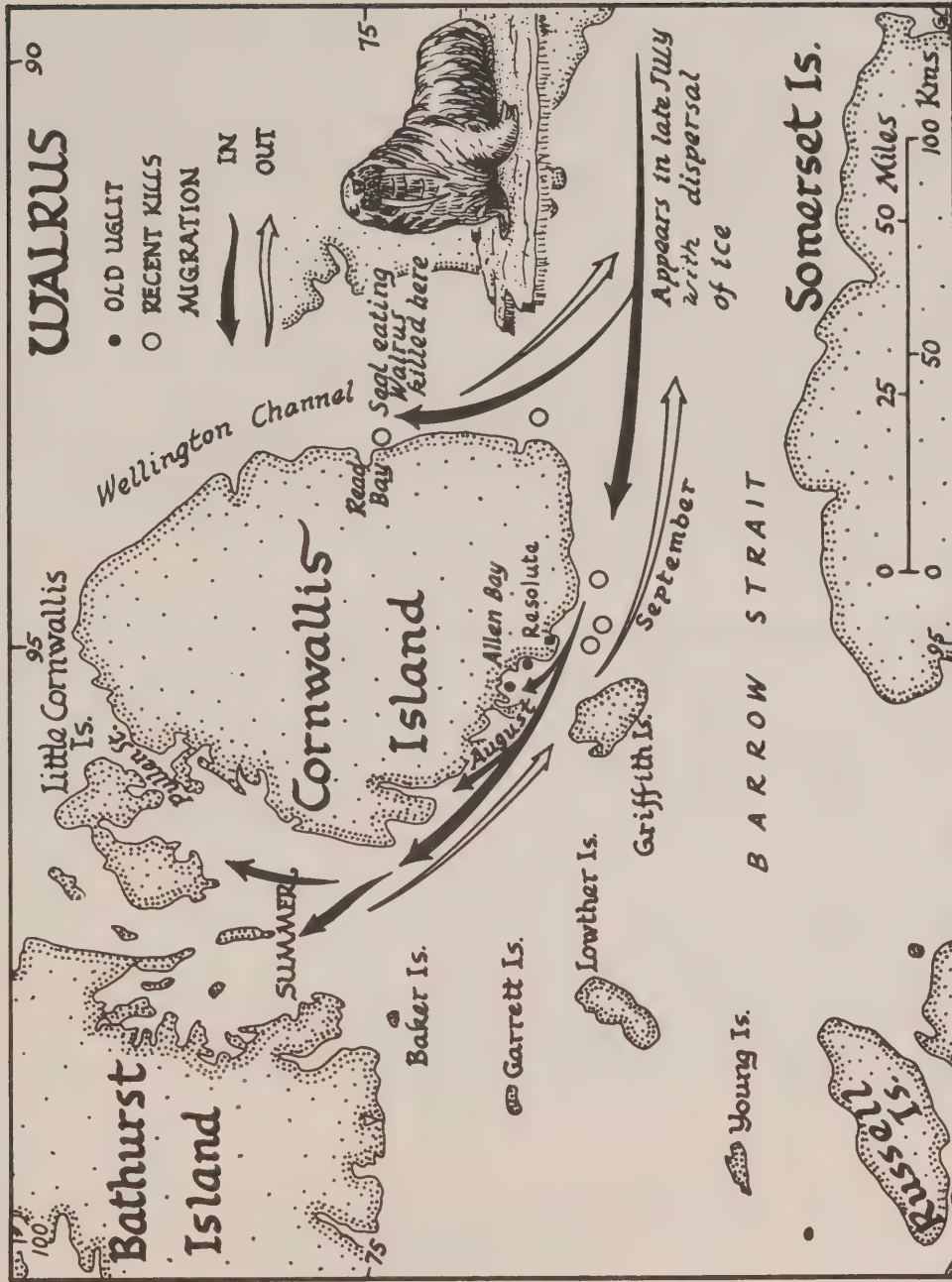
As with beluga, the walrus kill has dropped sharply with a decline in the number of sled dogs. Walrus follow the break-up of the ice moving westward into Barrow Strait area. In late July and August, large numbers are seen off Cornwallis Island and in the Allen Bay area. They have also been encountered in Wellington Channel and north in the Pullen Strait, Queens Channel areas. Two former uglits are reported to have existed on small islands in Allen Bay. These fell into disuse during the 1950's.

Year	No. Taken	Year	No. Taken
1958-1959	37	1962-1963	14
1959-1960	15	1963-1964	16
1960-1961	8	1964-1965	16
1961-1962	13	1965-1966	10

There would be little point in encouraging a larger walrus harvest simply on the basis of providing larger stocks of ivory for carving. Regulations prohibit the use of hides. Until the problem of sports hunting of Arctic sea mammals can be resolved, utilization of this resource is likely to decline.

Concentrations of walrus are reported to occur in August in the Crozier Strait area, the central part of McDougall Sound and in the vicinity of Truro

Figure 29 - Walrus Movements in the Resolute Area



Island. Numbers have also been sighted in Queens Channel north of Little Cornwallis Island. In Penny Strait walrus occupy an open-water area along the west side of Grinnell Peninsula in winter as well as a smaller, thin-ice area in the same vicinity. A Resolute Eskimo reported having killed a starving walrus on the sea-ice off Radstock Bay in February of one winter. The Somerset Island Eskimos were also reported to have killed a walrus on the sea-ice in March between Somerset and Lowther Islands while on a trading trip to Resolute.

Bowhead Whales (Balaena mystecitus)

In contrast to the Pond Inlet area where Bowhead whales are reported to be increasing, the Eskimos report a complete absence of this species in the Resolute area although archaeological and historical evidence indicates they were once plentiful. It is not known whether this is for ecological reasons or simply depletion of the species during the whaling era to a point where they have not re-occupied old zones. Limited boating activities by the Resolute Eskimos may account for the lack of sightings.

Narwhal (Monodon monocerus) and Killer Whale (Grampus orca)

Narwhal are infrequently sighted in very small numbers in Peel Channel and in Barrow Strait. Killer whales have not been reported from the area. Narwhal are not sighted in herds but rather in small groups. A total of three animals have been reported taken in the Resolute area and one in Peel Sound. The animal in Peel Sound was taken in an open-water area from the spring ice.

Beluga (Delphinapterus leucas)

There has been a radical decline in the number of beluga taken by Resolute Eskimos. The main hunting ground is along the south coast although occasional kills occur on boat trips in the McDougall Sound area. Beluga appear within the immediate vicinity of Resolute in September. They leave the area in October.

Year	No. of Beluga Taken	Year	No. of Beluga Taken
1958-1959	77	1963-1964	26
1959-1960	94	1964-1965	3
1960-1961	92	1965-1966	3
1961-1962	98	1966-1967	16
1962-1963	46		

The Resolute hunters state that while beluga are not declining apparently fewer are seen close to the settlement. A decline in the number of sled dogs results in wastage of meat since the Eskimos prefer the muktuk and utilize little of the whale meat as human food.

Fish

Fish are not an important resource in the Resolute area for a number of reasons. Good fish lakes are lacking with the exception of Eleanor Lake on the east side of Cornwallis Island and on the southern end of Bathurst Island. Small lakes on Bathurst Island are fished in June and July in conjunction with ski-doo hunting trips for seal and caribou. Fish are taken at this period by jigging and with fish spears. Eleanor Lake, which is more distant, has been fished on boat trips in August, but these do not occur every year due to ice conditions, the shortness of the boating season and, conflicts with employment at the Resolute Base. Eleanor Lake is approximately five square miles in surface or 3,200 acres. The Eskimos wait until a northwest wind has cleared the ice from Wellington Channel before travelling by boat. Boat trips are infrequent due to distance and fishing trips become uneconomic due to inefficient fishing methods and short periods spent in actual fishing. The small lake immediately behind the Eskimo village is fished in late September and very small char are taken by women and children fishing through the ice.

In 1964, the Resolute Eskimos imported char from Frobisher Bay at 94 cents a pound plus freight and in 1967 imported fish from Pond Inlet at 65 cents a pound plus an air freight cost of 40 cents a pound.

A development of fish harvesting projects at Pond Inlet and Arctic Bay would provide excess fish for shipment to Resolute and Grise Fiord. However, good fishing localities in both areas are located at some distance from the settlements and the logistics of resource harvesting and marketing present some problems. Also increased settlement orientation of populations in both areas calls for the development of projects to utilize resources not available to the majority of settlement Eskimos who previously had greater access to fish resources, etc.

A preliminary survey of fish species in the high Arctic was conducted in the summer of 1962 by the Arctic Unit of the Department of Fisheries. Only the lakes on Cornwallis and Somerset Islands have a pertinence in this report. Arctic char were present in a number of takes, but no other major fish species were taken.

TABLE 71 - Occurrence of Arctic Char in Various Lakes,
Queen Elizabeth Islands

Island	Lake	Arctic Char
Ellesmere Island Devon Island	"Romulus" Lake	0
	"Bowhead" Lake	-
	("Nick's" Lake)	-
Cornwallis Island	Eleanor Lake	-
	"Nelson" Lake	-
Somerset Island	"Fiona" Lake	-
	Stanwell Fletcher Lake	-
	"Sunday" Lake	-

The Resolute Eskimos have fished extensively in lakes on Bathurst and Cornwallis Islands without locating easily exploitable fish stocks warranting heavy or continued utilization. Fishing expeditions to Bathurst Island are limited in productivity since the Eskimos transport caribou and seal which constitute the bulk of ski-doo loads.

TABLE 72 - Char Fishing Locations Accessible from Resolute

Location	Distance in miles	Means of access
Eleanor Lake ³ east side Cornwallis Island	90	Ski-doo in spring, boat in late August or September
Sophia Lake, east side Cornwallis Island	70	Ski-doo
Snowblind Bay	74	Ski-doo
Cape Airy, two small lakes draining into Pioneer Bay. Allen Bay area, Cornwallis Island	40	Ski-doo in spring, boat in late August
Small Lake, west side Somerset Island Peel Strait area	92	Ski-doo, May, June
Two small lakes south coast Bathurst Island	73	Ski-doo late April, May, June
Dyke Acland Bay	86	Ski-doo late April, May, June

³Eleanor Lake catch reported to be declining by Eskimo. The Arctic Unit, Department of Fisheries, has estimated that Eleanor Lake could support an annual quota of 16,000 lbs. of char. This quota could be taken by efficient netting of the river draining Eleanor Lake in August. This would require leaving small boats on the site. The fish could be hauled in by chartered Atlas Aircraft. Alluvial flats east of Eleanor Lake permit easy landing by small aircraft.

Birds

The rock ptarmigan is the only important food species among land birds in the Resolute area. Quantities harvested are small, indicating small numbers within the immediate vicinity of the settlement. The common eider (*Somateria mollissima*) is found in the McDougall Sound area. These and old squaw ducks

Figure 30 - Fishing Locations Used by Eskimos of Resolute



are taken incidental to hunting expeditions. They are shot in the ayora (ice leads) in the spring and later in the open-water. Concentrations of murres and sea pigeons are found south of Griffiths Island in August and September. A large murre nesting site has been reported to exist on Prince Leopold Island north of Port Leopold, but this is too distant for eggging expeditions.

Snow geese and lesser Canada geese are taken only in small numbers chiefly in the spring but are nowhere plentiful in the summer hunting zone. Snowy owls are an occasional diet variation.

Berries

No berries are available for harvesting by Resolute Eskimos due to a lack of major plant species and a short growing season.

Expanded Use of the Resource Base

In view of the current resource utilization trends as indicated by game takes, one may assume that utilization of caribou will increase while utilization of walrus and beluga will continue to decrease. Seal utilization will presumably continue at existing levels.

The Eskimos at Resolute do not appear to be meeting their total local food requirements from the existing resource base. Employed Eskimo males receive three meals at the Base during working days. These are balanced meals in contrast to the bannock, tea diet supplemented by meat which is standard for wives and families in the village. The 1967-68 Co-operative sea-lift order did much to improve the types of food available for consumption by families, but stocks were quickly depleted. The construction of a permafrost cellar in 1967 should encourage hunters to accumulate a good supply of food.

Muskoxen

Muskoxen are a resource which has been of no importance in the economy of the Eskimo residents of the high Arctic due to restrictions against killing them.

Within the general resource zone of the Resolute Eskimo, muskoxen are found principally on Bathurst Island, but they are also found on Cornwallis Island, Griffiths Island, Devon, Prince of Wales and Somerset Islands. The muskoxen population on islands of Elizabeth Archipelago constitutes a major part of the existing population in the world today.

TABLE 73 - Provisional Total Muskox Populations and Observed Age Structures, Queen Elizabeth Island, N.W.T., 1961

Island	Estimated muskoxen population	Observed calf (per cent)	Observed yearling (per cent)
Devon	200*	-	-
Cornwallis	50	-	-
Bathurst	1,161	9	2.7
Melville	1,000	17.22	1.1

*Few data

(Continued)

TABLE 73 (continued)

Island	Estimated muskoxen population	Observed calf (per cent)	Observed yearling (per cent)
Amund Ringnes	10	-	-
Axel Heiberg	1,000	6.78	6.78
Ellesmere	4,000	12.4	12.89
TOTAL	7,421		

Within the resource area, muskoxen are unevenly distributed according to the quantity and availability of food and weather conditions affecting the availability of forage. Muskoxen are absent over much of Cornwallis Island due to a paucity of food. Similar conditions exist in Somerset Island. Marginal areas may be abandoned during periods of poor weather.

Summer ranges are **centered around streams**, (see page 153), meadows, ponds or lakes, favouring vegetation growth. The area between Goodsir and Bracebridge Inlet on Bathurst Island is heavily ponded, and the vegetation is comparatively lush. Concentrations of muskoxen are found in this zone in summer. Muskoxen consume a wide variety of plants including woody species, flowering plants, grassy sedges and, fortuitously, lichens.¹

In winter, within the resource zone, muskoxen are found on south Bathurst Island in the hill and plateau **areas exposed to northwest winds**. The Eskimos report that infrequent heavy snows in the Dyke Acland area on Bathurst Island results in a movement of muskoxen to the east and northeast. On Cornwallis Island, the muskoxen found on the northwest plain move to the west coast during the periods of heavy snowfall.

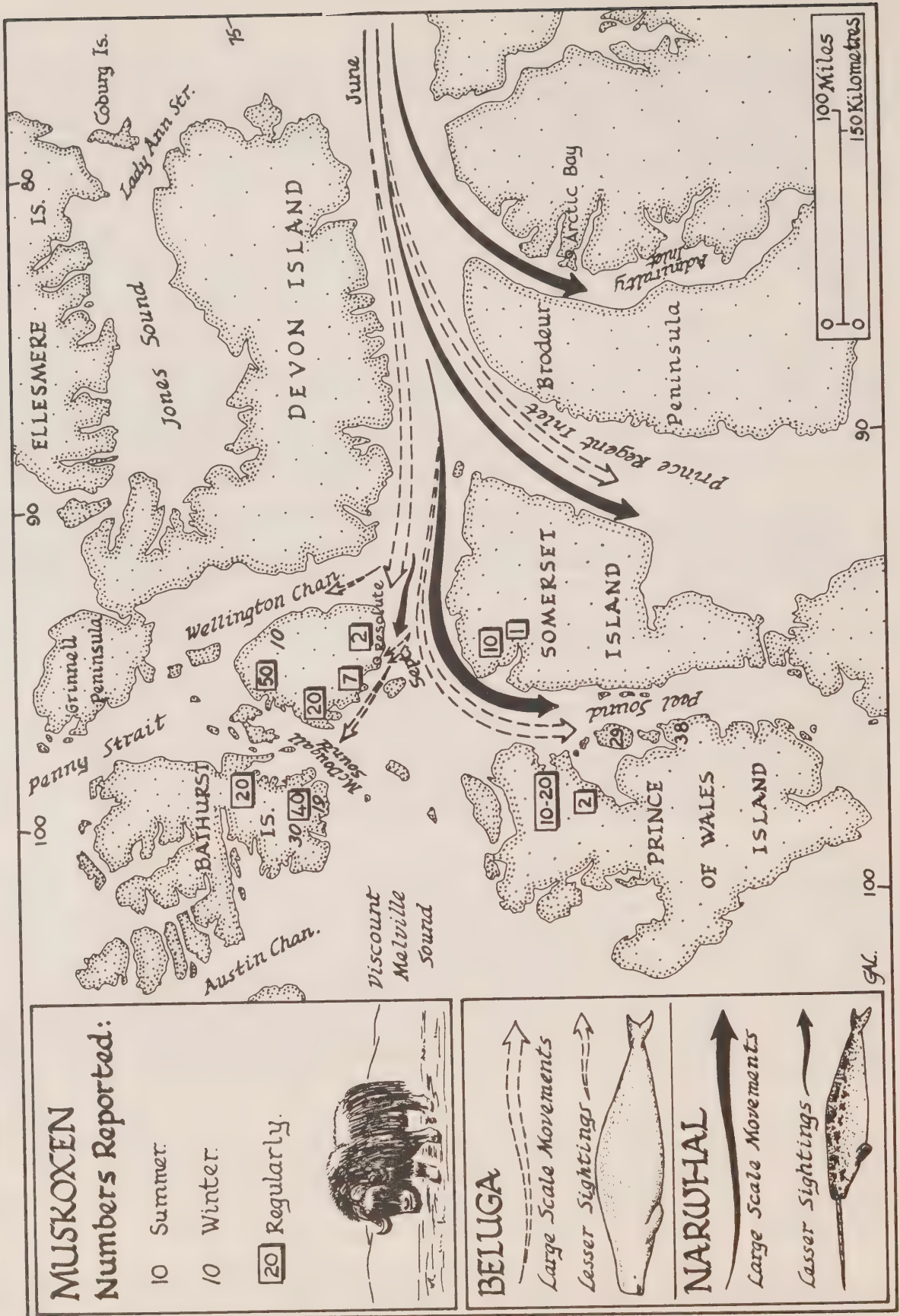
Calving occurs between late April and the end of May. The rutting season commences near the end of July and continues into September. The gestation period is between 8 - 9 months and cows are in lactation for eighteen months. There is some variance in the reproductive rate of muskoxen. Cows reach sexual maturity at three years while bulls are mature at six years. In the Queen Elizabeth Islands, according to available evidence, calves are produced only every second year, while elsewhere captive muskoxen have calved yearly (Alberta). Cows in the wild breed at 3 - 4 years but earlier breeding has been recorded for captive muskoxen which have produced calves at two to two and a half years.

Predation consists chiefly of wolf predation on younger calves and isolated animals. Muskoxen are also subject to winter starvation and accidental drownings. Frequent reports are received of dead muskoxen within the immediate area of Resolute, a zone where forage conditions are poor and appear insufficient to support muskoxen in winter.

Recently, a great deal of controversy has arisen over proposed utilization of muskoxen through sport hunting. Proposals for sport hunting of muskoxen have been reviewed by the Council of the Northwest Territories. Public opinion has been generally against sports hunting of muskoxen for a number of reasons. Little sportsmanship is involved in shooting an animal which

¹Tener, J., 1965, p.45.

Figure 31 - Composite Map Showing Reported Distribution of Muskoxen, Beluga Whale and Narwhal



normally assumes a defensive ring. Also a great deal of publicity has arisen out of the uniqueness of the species, conservation of muskoxen, and the well-documented decline in the early part of the twentieth century due to wanton slaughter by Eskimos and Indians (during the early fur-trade period) whalers and exploratory expeditions. A recommendation placed before the N.W.T. Council in 1967 for sports hunting of muskoxen was withdrawn by the superintendent of game.

Animals which have died due to senility do not provide much to the over-all economy. However, old and senile animals provide a source of food for predators and their availability reduces predation on younger and more healthy animals. Tener (1965, p.117) has stated the biological characteristics of muskoxen and of the environment which supports them as such that only limited future utilization of the species can be considered.

The Eskimos at Resolute have shown a general interest in sports hunting of muskoxen by non-Eskimos. This stems from general interest in hunting and the potential revenue and the possibility of taking some muskoxen for themselves. Also caribou hunting could be carried out while on muskoxen hunts. They show some proprietary interest in the muskoxen and have reported starving or dead muskoxen within the immediate area of Resolute and elsewhere.

Some compromise might be reached in harvesting animals in the sub-marginal areas in the resource zone or in areas where populations are continually threatened by adverse weather conditions on Bathurst Island, the zone between Goodsir Inlet and Bracebridge Inlet is ideal for summer cropping of old and senile animals which do not appear capable of surviving the winter. The area is suitable for landing of light aircraft. There is a small abandoned airstrip.

Adverse public reaction to sports hunting could probably be overcome by a program of transplanting herds to extend the range of the species.

Aerial Reconnaissance

On the evening of July 18, 1967, an aerial reconnaissance was made of Cornwallis Island, Little Cornwallis Island and a narrow zone of Bathurst Island between Crozier Strait on the east and Bracebridge Inlet on the west. Muskoxen and caribou were sighted in various localities and these have been recorded on the accompanying maps. Both muskoxen and caribou were relatively undisturbed by the low-level aerial reconnaissance, although caribou with calves fled on sighting the aircraft from some distance.

On Bathurst Island, one wolf was sighted in close proximity to muskoxen and caribou. A landing was made and a single muskoxen and a group of five were approached to within twenty feet. The single, old bull rubbed his forelegs in a threatening stance, but finally moved slowly away. The group of five assumed the customary defensive ring and nervously shifted positions but made no attempt to charge.

Pilots, Resolute Eskimos and others are aware of the concentrations of muskoxen and caribou in the Goodsir, Bracebridge Inlet area in summer. The recorded sightings should not be interpreted as representative of all of Bathurst Island. Flight elevation during the survey varied from 500 to 1,000 feet.

TABLE 74 - Muskoxen and Caribou Observations, Bathurst Island, July 18, 1967

Sites, Number on Map*	Muskoxen		Caribou		Sites, Number on Map*	Muskoxen		Caribou	
	Calves	Others	Calves	Others		Calves	Others	Calves	Others
1	-	-	-	4	33	-	-	-	3
2	-	-	-	3	34	-	-	-	15
3	-	-	-	1	35	-	-	-	3
4	-	-	-	1	36	-	-	-	1
5	-	9	-	-	37	-	-	-	3
6	-	-	1	1	38	-	-	-	10
7	-	-	-	2	39	-	-	-	2
8	-	-	-	9	40	-	-	-	7
9	-	-	-	4	41	-	6	-	-
10	-	-	-	7	42	1	11	-	-
11	-	5	-	-	43	-	-	-	2
12	-	-	-	5	44	-	1	-	-
13	-	-	3	14	45	-	3	-	-
14	-	1	-	-	46	-	3	-	6
15	-	9	-	-	47	-	-	-	9
16	-	5	-	-	48	-	-	-	3
17	-	-	4	6	49	-	-	1	3
18	-	5	-	-	50	-	-	-	4
19	-	-	-	7	51	-	-	-	4
20	-	2	-	-	52	-	-	-	4
21	1	3	-	-	53	-	-	-	4
22	-	5	-	-	54	-	5	-	-
23	-	-	-	2	55	-	-	-	5
24	-	-	-	1	56	-	3	-	-
25	-	4	-	-	57	-	-	-	1
26	-	-	-	1	58	-	5	-	-
27	-	-	-	2	59	3	8	-	-
28	1	5	-	-	60	-	2	-	-
29	-	3	-	-	61	-	3	-	-
30	1	13	-	-	62	-	-	-	2
31	-	-	-	7	64	-	15	-	-
32	1	11	-	-					
					Totals	8	142	6	168

*See Figure 34

During the same flight, an aerial reconnaissance was carried out along the west side of Cornwallis Island and the sightings have been recorded on the map. Sightings along the east side of Cornwallis Island produced poor results with muskoxen being observed only in the vicinity of Eleanor Lake.

Figure 32 Game Observed, July 18, 1967.



TABLE 75 - Muskoxen Sightings from the Air,
Cornwallis Island, July 18, 1967

Map No.	Calves	Others	Map No.	Calves	Others
1	1	3	8	3	4
2	-	-	9	1	1
3	-	1	10	-	4
4	-	2	11	-	3
5	-	4	12	-	2
6	-	2	13	-	4
7	3	9	14	-	1
			15	-	2

In addition to muskoxen observed, only 10 caribou were sighted in the Coal River area during the course of the flight.

On September 19, 1967, aerial observations of game on Cornwallis Island were made during a flight to Grinnell Peninsula. An increased number of muskoxen were noted in the Eleanor Lake area. This flight did not constitute a total survey.

TABLE 76 - Muskoxen Sightings from the Air,
September 19, 1967

Map No.	Calves	Others	Map No.	Calves	Others
1	-	3	6	-	1
2	-	1 bull	7	2	2
3	-	1 immature	8	-	2
4	-	3	9	2	2
5	1	9	10	1	2

Winter Die-Off of Muskoxen

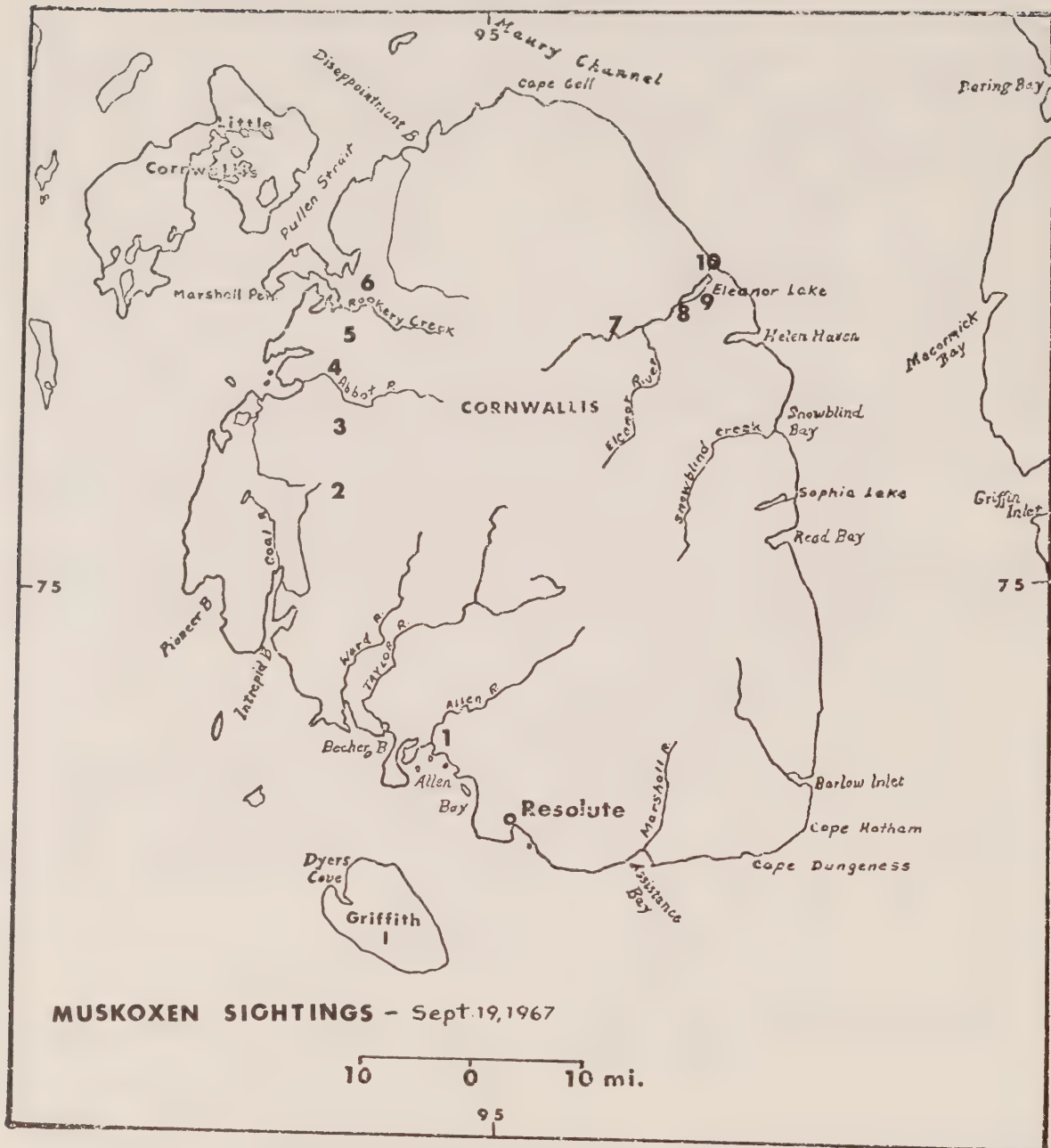
In the winter of 1967-68, there was a heavy snowfall on Bathurst, Cornwallis and Somerset Islands which is reported by Eskimos to have resulted in the movement of muskoxen across the sea-ice in search of forage. Tracks of muskoxen were sighted crossing Barrow Strait in a southerly direction. Two drownings are reported to have occurred due to thin-ice, one off the southeast tip of Griffith Island and one off the northwest tip of Moore Island just off the south coast of Bathurst Island.

The Eskimos reported large numbers of muskoxen and caribou tracks in coastal areas in the Pullen Strait and McDougall Sound area. One Eskimo collected four sets of horns from dead muskoxen in southeast Bathurst Island in late June 1968. Two dead muskoxen were reported in the immediate vicinity of Resolute in March 1968. Eskimos fishing at Eleanor Lake on east Cornwallis Island reported a total absence of muskoxen in June except for a dead animal.

Figure 32 - Game Observed July 18, 1967



Figure 34 - Muskoxen Sightings, September 19, 1967



The muskoxen moved to the littoral areas in search of food. Heavy snows on Prince of Wales Island are reported to have resulted in a movement of caribou east across Peel Sound to Somerset Island.

Some indication of the severity of the winter foraging conditions for muskoxen and caribou may be derived from the climatic data for the winter months.

An experienced Eskimo hunter pointed out that Cornwallis and Somerset Islands were less suitable for muskoxen than Bathurst Island due to autumn rains and heavier snowfalls in the early part of the winter combined with a general scarcity of suitable forage. The records set out in Table 77 may be compared with the averages and extremes of weather at Resolute on page 5.

TABLE 77 - Snowfall Records, September 1967 to June 1968^H

Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total	
11.6	8.9	1.5	3.0	2.6	0.7	1.5	2.5	8.0	5.2	45.5	
Trace of rain				no trace of rain						Trace of rain	inches snowfall
Temperature Averages											
-25	-8	-8	-22	-28	-33	-22	-6	-15	-34		

^HSnow fell earlier and was abnormally high for September and October

Part VI - Eskimo Camps

Eskimo Camps

No permanent Eskimo camps are known to have existed in contemporary times on Cornwallis or South Bathurst Islands. Two families from Pond Inlet had a qarmat in the Freeman Cove, McDougall Sound areas of Bathurst Island for a winter in the 1920's while on an extended hunting trip. They hunted polar bear and muskoxen there as well as on south Devon Island.

Three north Baffin families lived in the Browne Bay area of Prince of Wales Island in 1929-1931 and traded at Port Leopold (Sekanik). Their winter camp was based on an island north of Prescott Island, and they had summer camps in the Browne Bay and Back Bay areas. Prince of Wales Island was known as Kingalik and the people as the Tujamiut. They followed Peel Sound and the north shore of Somerset Island by dogteam to reach Port Leopold. This camp disbanded in 1931-1932 with the inhabitants moving east to north Baffin Island.

Contemporary Camps Somerset Island and North Boothia

Two small camps exist on Somerset and northern Boothia Peninsula. One is located on the eastern end of Stanwell Fletcher Lake in the Cresswell Bay area. The leader is a Tununirmiut from Pond Inlet with relatives at Arctic Bay and at Parry Bay, Melville Peninsula. This group consisting of two family units has traded at Resolute and Spence Bay.¹ In 1968, they traded some bearskins at Resolute, but finding the store stock depleted subsequently made a trading trip to Spence Bay. An unmarried son was unable to find a bride among the Eskimos at Resolute in 1967 and returned to Kooganaiyu (Koovanayoo) in 1968.

The Cresswell Bay area is a rich sea mammal resource zone and caribou have increased on south and western Somerset Island. The family spends the summer in Peel Sound area for caribou hunting in the Howe Harbour area.

Arctic char are speared on the river draining from Stanwell Fletcher Lake and provide an important source of food. No saputits have been erected on this river due to currents.

Ikkerasar Camp

A single family unit presently occupies a camp at the eastern end of Bellot Strait. Four family units left this camp in the spring of 1967 and returned to Arctic Bay. There are two camp locations in the Brentford Bay area, and island west of Possession Point and on the northeast coast of Boothia Peninsula. The principal trapping area is the indented coast of Brentford Bay. There is a stone weir for fishing at the south end of Nudlukta Inlet. Maulirtuk sealing is carried out at the eastern entrance of Bellot Strait while open-hole sealing is carried out in Brentford Bay. In winter there is an open-water area at the eastern end of Bellot Strait which provides excellent opportunities for winter sealing. Polar bear are hunted east of Cape Farand while caribou are hunted in summer west of Amituryouak Lake and in winter southeast of Amituryouak Lake. In 1967, four family units left this camp and returned to Arctic Bay. Three family units now at Resolute have lived at Ikkerasar.

¹This is an extended family unit

Resource Base of the Cresswell Bay & Fort Ross Eskimos

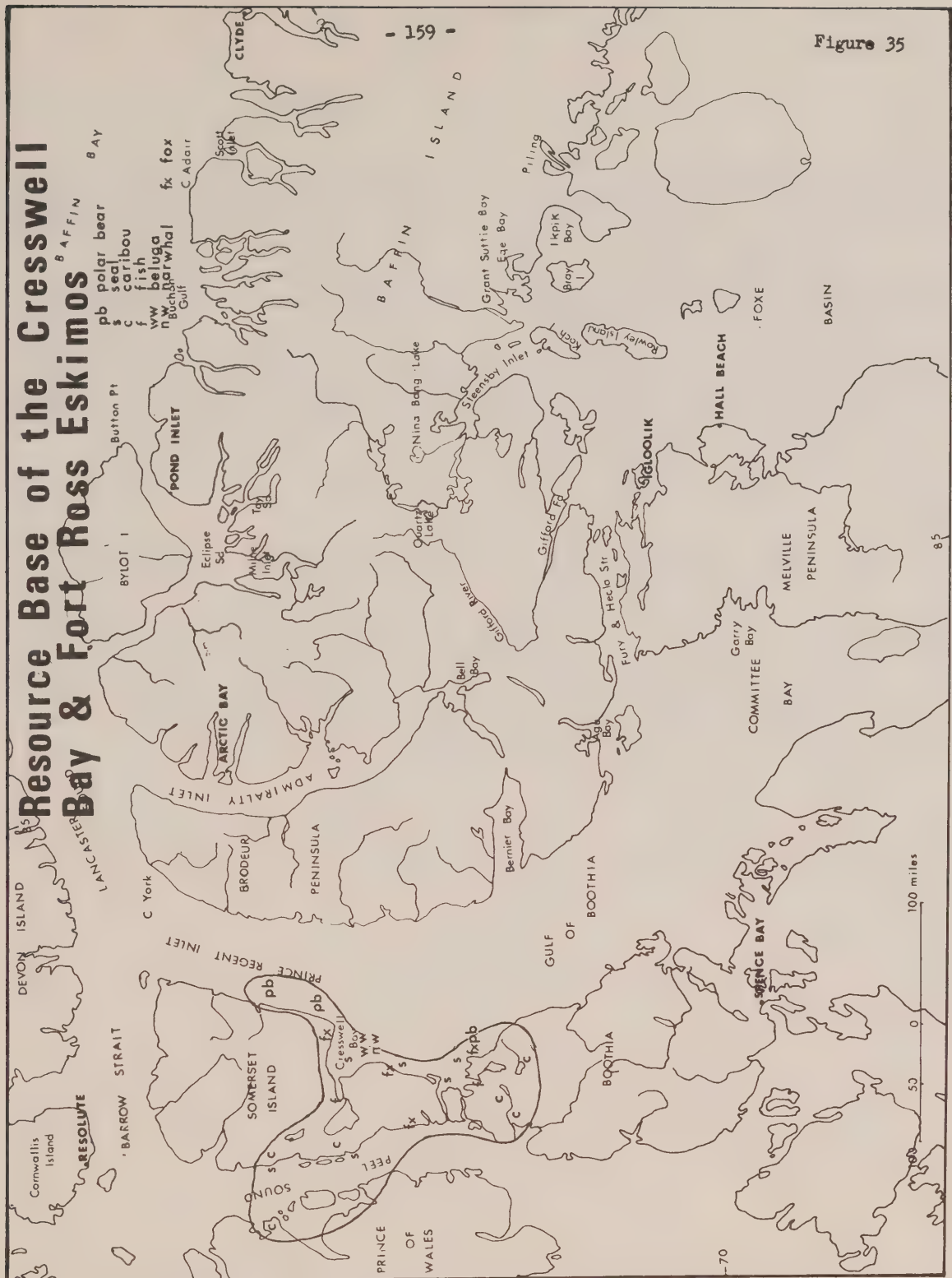


Figure 35

Comments

The Kooganaiyu family as well as former members of the Ikkerasar camp, who returned to Arctic Bay in 1967, would like to see a trading post re-opened on Somerset Island. They have pointed out that conditions in Peel Sound are better for large ships than Prince Regent Inlet during the summer. For the present, the small population now living on Somerset Island and northern Boothia Peninsula does not warrant the establishment of a small community.

From the standpoint of distance, the **Kooganaiyu group is closer to Resolute**, but trading by dogteam is restricted to a relatively short duration in the spring months due to uncertain ice conditions in Barrow Strait and the group does not possess a boat with which to make long distance trading trips in the summer.

Summary

Resolute offers an example of a successful experiment in settlement of Eskimos in the Queen Elizabeth Islands. The economy is presently satisfactory, but it could be improved by developments in transportation, tourism and handicraft industries as well as increased employment opportunities. The relative success of varied age groups of Eskimos in wage employment as exemplified in Resolute and on the DEWline suggests that relocation programs of moving Eskimos to areas of greater economic activity be stressed by the Department. Continued immigration of Eskimos should be predicted on the availability of wage employment rather than on the resource base.

The role of Resolute as a sub-regional or regional center could be expanded through the development of an administrative and stores system to meet the requirements of the hinterland centres of Arctic Bay, Pond Inlet and Grise Fiord.

Part VII - Recommendations

Potential of Resolute in Terms of Relocation of Eskimos from Other Zones in the Arctic

Resolute may offer some potential in terms of relocation of population. The major problem appears to be in the matter of wage employment. Immigrants from other areas have in the past taken wage employment shortly after arrival in the settlement. Increased immigration would call for more jobs being available both in the settlement and at the base. An expansion of settlement jobs does not appear to be feasible at present, while the number of jobs at the base could be expanded beyond the existing number through selection and training of potential immigrants. Immigration to Resolute from other high Arctic communities is likely to continue due to the extended family relationships. Unfortunately, this is not a "selective" or sponsored immigration and individuals without basic skills will only be able to secure casual employment since there are no facilities for on-the-job training in Tower employment at Resolute.

In resource terms, the sea mammal resource base could be expanded. The total trapping area presently being trapped is small in terms of potential areas. This would call for a system of line cabins since the short lines are a result of the extended dark period as well as the existence of a wage economy. The major caribou hunting areas are presently being hunted and the quota for polar bear is a limiting factor in hunting that species. The factor of diet change must also be taken into consideration. Seal is declining in importance as a food resource while caribou and fish are still of major importance.

The establishment of new communities in the high Arctic based solely on the returns from hunting, trapping and fishing is no longer realistic. Factors of high production costs, transportation costs and sophisticated southern markets with fickle tastes all militate against the establishment of communities based strictly on resource harvesting activities. Few middle-aged Eskimos have shown a reluctance to enter wage employment or enjoy the benefits of social assistance payments. Communities with minimal facilities, store, housing, airstrip etc. are expensive undertakings and should only be contemplated in the light of mineral or oil developments requiring resident populations. The only zone which offers any major potential for new communities based on traditional pursuits appears to be in the Peel Sound area and large scale expenditures devoted to assessing potentials and establishing a community in that area should be devoted to improving existing communities elsewhere.

Relocation of Eskimo Community to Main D.O.T. Airbase

In recent years, some consideration has been given to moving the Eskimo village to the D.O.T. base to overcome costs of servicing the community in terms of water and electrical supply, pick-up and delivery of Eskimo workers employed on the base.

Factors pertinent to Relocation at Base

There are a number of factors to be considered. These are: reduction in Eskimo employee absenteeism; reduction in cost of services and road maintenance; potential for enlarging Co-operative store into a functional retail operation.

Factors Against Relocation at Base

The following are the major factors against relocation at the base: potential problems arising from excessive drinking; lack of non-Eskimo family groups; problem of storing hunting and trapping equipment; lack of full employment among Eskimos.

Examples are available from the Distant Early Warning Line in respect to Eskimos living and being employed on base. Eskimos were recruited from a large number of Arctic settlements for employment on the DEWline in the period between 1956 - 1968. The prime examples are Cape Dyer and Foxe Main, N.W.T., where Eskimo families live on base, and the men are employed by Federal Electric Company. Over a period of years absenteeism has been low. Eskimos in these communities have been largely disassociated from traditional hunting and trapping activities except during periods of leave. Educational facilities have been lacking and children attend school elsewhere, Inuvik, Igloolik, Hall Beach, Chesterfield Inlet and Broughton Island.

Relocation of the Eskimo village to the D.O.T. airbase would present some difficulties for a group who have supplemented wage income with the returns from hunting and trapping. These are four large boats which require some care particularly during the open-water period mid-August to the end of September. Also there are some Eskimos who prefer to combine wage employment with hunting and trapping and would be idle hangers-on at the base for long periods if relocation took place. It appears likely that a decline in resource utilization would occur. The matter of relationships with base personnel could present some difficulty for supervisors and management. Serious problems might arise from excessive drinking. On the DEWline, problems of this nature can be controlled by removal or transference of offending parties elsewhere. This would be impossible at Resolute since the Eskimo population is indeed resident in the immediate vicinity.

The problem of coping with transportation and accommodation for transient Eskimos would be solved to a large extent through integration of the Eskimo into the D.O.T. airbase. This advantage would be offset by the presence of non-employed transient Eskimos on an operational airbase for varying periods of time.¹

Also D.I.A.N.D. has committed itself heavily to the perpetuation of the Eskimo community through the erection of school, staff housing and warehousing. Other agencies notably N.H.S. and the Anglican Church have interests in the community. Existing buildings could be moved due to prefabricated construction, but the expensive power distribution system would fall into disuse.

Conclusion

Due to the current socio-economic factors at Resolute and existing and potential developments, there appears to be little point in relocating the Eskimo village at the airbase. D.O.T. and Tower personnel at the base in general are not favorably inclined towards a relocation of the Eskimo population. Alternatives to resettlement at the base have been suggested by base personnel. The major one has been to locate the Eskimo community south of Char Lake. This would offer no major advantages with the exception of access to an adequate supply of fresh water.

¹One hundred and fifty-three Eskimo transient stop overs were recorded for 1967

Resolute offers considerable potentials for tourism due to a variety of tourist attractions.

Types of Tourists

While sports hunting and fishing offers the greatest incentive and would be the most expensive form of tourism, there are other forms of tourism to which promotion should be directed. These are: groups of university students; naturalist groups, rock hounds; individual tourists with photographic, human interests, etc.

These groups, while generally less affluent than sports hunters, demand less **attention**. The chief source of revenue would, of course, lie in food and accommodation and the sale of arts and crafts.

Factors for Tourism

1. Readily accessible by scheduled aircraft
2. Ample variety of fauna available
3. Availability of air charters to more remote locations and outlying settlements
4. Availability of arts and crafts
5. Potential for sports hunting (i) Muskoxen, caribou, walrus, seal - August (ii) Polar bear, seal - April, May (iii) Char fishing - August
6. Availability of ski-doo's and boats

Factors Against Tourism

1. Distance and cost factor
2. Weather conditions (variability)
3. Lack of accommodation
4. Variability of employment factors in the settlement
5. Low incomes from guiding
6. Lack of interest on the part of Eskimos

Discussion of Existing Factors to be Overcome

Distance and cost factors cannot be termed a major deterrent. The return air fare from Montreal is \$370.00. Twice weekly scheduled flights permit an opportunity for tourists to pick and choose time and length of visits. Considerable variability in weather conditions occurs at Resolute. In terms of tourism, the spring months of April, May and June and the summer month of

August are perhaps most ideal. Depending on the type of tourist, the problem of accommodation can be simply remedied. Two three-bedroom houses in the village could be made available by the Eskimo Co-operative in co-operation with D.I.A.N.D. There are at least four units of the older-type which could be repaired and redecorated for use by tourists.

The major problem would be, of course, in interesting the Eskimos in tourism as a source of revenue. The development of tourism at Resolute would require increasing food stocks in the Resolute Co-operative store and setting up facilities to meet requests for ski-doo and boat trips depending on the season. Transportation would have to be made readily available between the airbase and the village. In 1968, the Resolute Co-operative purchased a truck from Crown Assets Disposal Ltd. There are Eskimos in the village, who with minimal training and assistance could operate a small scale tourist operation both in terms of over-all management and day-to-day operations.

Resolute Bay is an access point for other settlements in the high north, Pond Inlet, Arctic Bay and Grise Fiord. Some research could be devoted to the establishment of package deals whereby the tourist would use Resolute as a central base for tours of the other settlements. Opportunities for char fishing are available at Eleanor Lake. An overnight cabin and small boat at the lake would put fishing within the range of tourist potentials.

It is recommended that serious consideration be given to the retention of two or three of the old Eskimo housing units be taken over by the Co-operative and retained for the use of tourists visiting Resolute.

Sports Hunting

In the eastern Arctic, the single major basis for an expansion of tourism appears to be in making available the larger game mammals for sports hunting on a quota basis. Despite the attractiveness of various areas, both distances from outside the Territories and local distances are prohibitive in terms of the development of a large tourist flow in the eastern Arctic based solely on scenery, handicrafts and the charm of the local residents.

An over-all decline in camps and changing utilization patterns had resulted in a decline in utilization of some species and, in effect, the wastage of a potentially economic resource.

The walrus provides an excellent example of a species for which potential economic returns have been restricted by regulations prohibiting sports hunting and export of the hide and raw ivory for commercial purposes. The restrictions were applied to protect walrus from over-exploitation by commercial interests and wastage resulting from the use of modern weapons by Eskimos. Restrictions have been less than successful in some areas in preventing wastage due to poor hunting techniques (Hall Beach, N.W.T.). Walrus hunting in the Resolute area has declined in importance with a decline in the number of dogteams. Elsewhere, walrus herds are no longer within the changing resource utilization zones since Eskimo populations reside in settlements rather than camps. A limited quota system for walrus would increase the tourist potential of several eastern Arctic settlements (Resolute, Hall Beach, Igloolik, Cape Dorset and Coral Harbour). The quota system could be kept well within the annual take and be considered as part of the annual take since the Eskimos would retain the meat. Trophy hunting of walrus has been introduced into Alaska to encourage a better utilization of

walrus herds and increase the economic returns from this species. At present the only monetary returns are realized through retailing raw walrus tusks and bacculum or carved items. The current price for tusks is \$1.50 a pound at the Hudson's Bay Company and bacculum sell at \$1.00 - \$2.00 each. Carved tusks and bacculum bring good returns but are not comparable to potential returns from trophy hunting. A quota system for walrus would increase the tourist potential of ringed and bearded seal hunting which by themselves are less attractive to sportsmen interested in taking home trophies. The licensing system should be restrictive to prevent casual or careless hunting by non-Eskimo residents. An annual sports quota of 10 to 20 walrus for Resolute would provide increased revenue to this community and bring about increased utilization of boats during the short open-water sealing. The small quota would not be detrimental to existing stocks.

Feasibility of Sports Hunting for Polar Bear

Sports hunting of polar bear has been suggested as a means of increasing revenue and offsetting the necessity of setting quotas with a resulting decrease in income.

Resolute appears to offer a considerable strategic advantage in terms of sport hunting for polar bear. Among the factors are:

1. Ready accessibility from Montreal.
2. Proximity to good polar bear hunting areas.
3. Availability of experienced Eskimo hunters.
4. Larger than average quota for bear.
5. Availability of transient accommodation.
6. Short-term hunting required.

It seems unlikely that the majority of white hunters would be interested in accommodation in the village. At present this is non-existent and it would require a substantial investment in buildings. Also, the Eskimos are simply not equipped to cater to the whims of sports hunters during off-hunting periods. The alternative appears to be for hunters to be accommodated at the D.O.T. base or for the Co-operative to erect and maintain accommodation at the D.O.T. base. Of the two, accommodation at the D.O.T. base would be preferable both in the interests of the project and the interests of the sports hunters. Bar, lounge and movie facilities are available.

Initial Sports Hunting Quota

An initial 10-bear quota would be well within the over-all quota set for Resolute Eskimos. This number would permit testing of hunting methods, hunter reaction to accommodation, hunting facilities and interest of the Resolute Eskimos in a project of this nature. The month of April and the first half of May would appear to be the most feasible period in terms of hunting conditions and primeness of bear pelts. Climatic conditions have ameliorated sufficiently to permit hunting by non-Eskimos.

Transplanting Muskoxen to other Localities

Resolute offers some strategic advantages for experiments in establishing muskoxen in other areas. Helicopters and tranquilizing drugs have been successfully used for capturing and transplanting muskox calves on Nunivak Island in the Bering Strait area of Alaska. Helicopters were also used with success in taking muskox calves at Eureka, N.W.T. The major reasons for contemplating the transplanting of muskoxen to other areas would be to extend the range of a resource presently confined to inaccessible areas. The presence of this species in more accessible areas would increase tourist potentials, permit experiments in domestication and ultimately offer resource harvesting possibilities through sports hunting. Four localities appear to be favourable in terms of air transport and short delays in moving the animals to new locations. These are Hall Beach, Milne Inlet, Frobisher Bay and Coral Harbour. Previous experiments in transplanting muskoxen have been confined to the capture of calves with subsequent feeding and protection until they were able to fend for themselves. Due to the availability of tranquilizing drugs and the possibility of transporting animals to new areas quickly, it is suggested that adults be taken as well.

The zone on northwestern Cornwallis Island could provide the necessary animals and is suitable for low-level flying during the pursuit and capture stage. Animals move southeast of this area into the immediate vicinity of Resolute, an extremely marginal zone where they have difficulties in finding food in winter. Every attempt should be made to avoid the pre-calving or calving periods in the spring and the rut period in the summer to avoid disturbing the animals at these critical periods in the life cycle. Atlas Aviation based at Resolute could be approached to provide aircraft to be used in capturing the animals. The terrain conditions are suitable for jeeps. Helicopters are commonly based at Resolute during the summers on charter work. Nordair regularly flies into Resolute and offers facilities for transporting the animals by regular flight to Hall Beach and Frobisher Bay. A charter flight would be required for both Milne Inlet and Coral Harbour.

Types of Costs Involved in the Capture and Transportation of Muskoxen

Aircraft or helicopter used in capturing animals; construction of temporary holding pens Resolute; transportation costs from Resolute to selected sites.

The capture and transportation of small herds of five to six animals would permit immediate release of the animals at the new location. If the animals were taken in early summer it is presumed they would have improved chances of adapting to new terrain and forage conditions.

Sales Potential for Arts and Crafts at Resolute

There is a large demand for arts and crafts at Resolute arising from the fact that it is a central jumping-off point for outlying weather bases (Mould Bay, Isachsen, Eureka and Alert). The usual change-over in personnel is supplemented in the summer period by an "invasion" of prospectors and scientists. Limited attempts have been made in meeting the demand for Arctic Bay carvings and other handicrafts. There is a display case at the base with a less than average range of items for sale. Visitors attempt to purchase carvings at the Co-operative store or find them in the village itself. This necessitates travelling to the

village on specific days when the Co-operative is open. The Resolute Eskimos produce for base personnel and the demand exceeds the supply. This is partly due to a lack of soapstone, but local employment is also a factor. Employed Eskimos find little time for carving. Recently, attempts have been made to establish a continuing supply of Arctic Bay carvings for sale at the D.O.T. base. The current Co-operative store manager has failed to co-ordinate the purchase of carvings from Arctic Bay shipment and resale although he is well aware of the large market potential.

The demand for carvings from Arctic Bay is being partly met by personnel connected with Atlas Aviation who purchase carvings at Arctic Bay, transport them to Resolute and clear a good profit. A large-scale shipment of Arctic Bay carvings could be transported by sea-lift in August reducing the costs of transportation. Inter-settlement general cargo rates are \$35.00 a ton. There is also an increasing demand for whale bone carvings from Pond Inlet. Eskimos visiting Pond Inlet from Resolute collect carvings for resale at a 100 per cent mark-up.

The problem of meeting the continuing demand at Resolute for Arctic Bay and Pond Inlet carvings lies simply in liaison between the community teacher at Arctic Bay and the Area Administrator at Resolute (assisting and encouraging the Co-operative to order and pay for carvings received). Atlas Aviation Ltd. has indicated that it might offer a reduced freight rate for carvings. There are also a number of air charters from Resolute to Arctic Bay and Pond Inlet.

Part VIII - Appendices

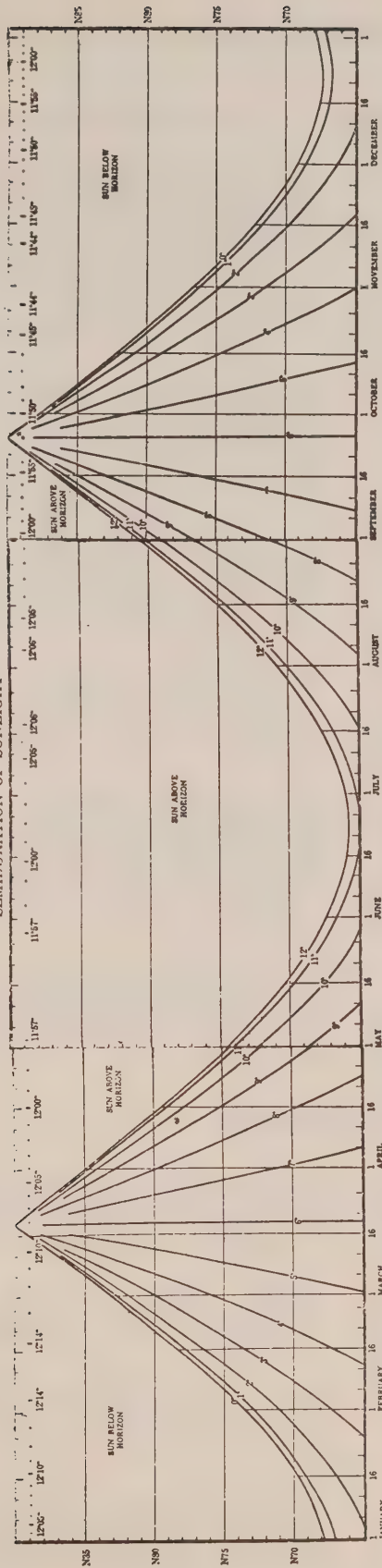
APPENDIX I

Component weights in pounds					
Species	Harp Seal	Walrus	White Whale	Bearded Seal	Muskox
Length	Male 5' 2"		Male 10'	7' 4"	6' 7½"
Meat	60	573	235	260	236
Skin	16	220	105	48	72
Blubber	60	224	174	166	-
Bones	21	188	106	52	78
Fore Flippers	1	-	10	2½	-
Hind Flippers	1	25	0	10	-
Tail	-	-	20	-	-
Heart	2	9½	6	4½	2½
Lungs	6	20	26½	11	6
Diaphragm	1½	2	9	2½	-
Wind Pipe	-	11	6	2	4
Liver	6½	50	29	20½	6
Stomach	1½	7	7	4	25 (empty) contents weight 120
Intestine	9	35	35	26	-
Pancreas	-	1½	1½	3	-
Spleen	1½	1	1	3	-
Kidneys	1	5½	5½	1½	-
Testis and Penis	1	2	2	-	-
Tongue	-	-	2½	½	1
Brain	-	-	5¼	1	¾
Skull Bones	-	-	-	-	28
Back Fat	-	-	-	-	12
Internal Body Wall	-	-	-	-	4
Intestine	-	-	-	-	8
Total body weight	195 lbs.	1,420 lbs.	786 lbs.	607 lbs.	637 lbs.

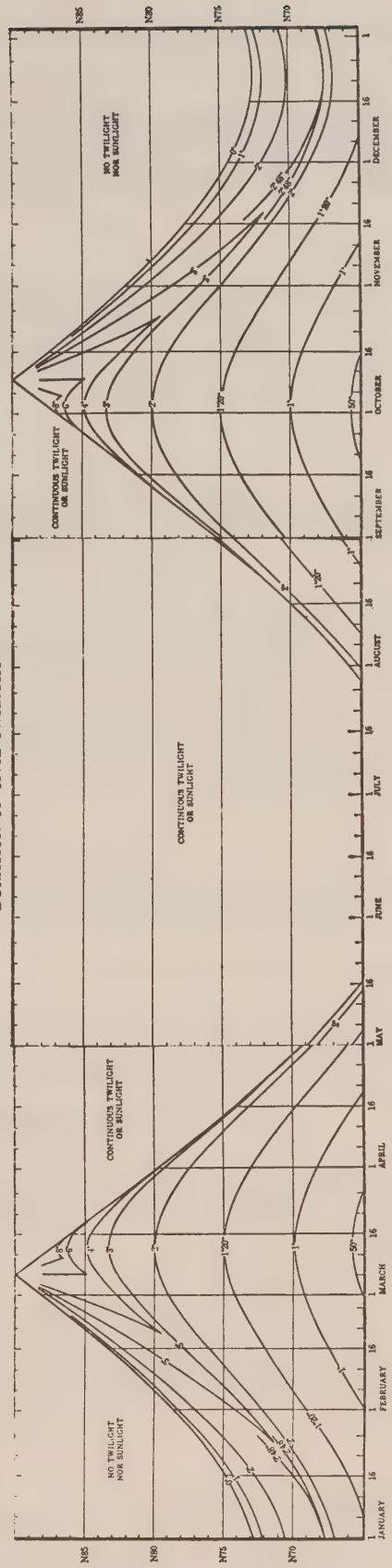
Based on samplings conducted in regard to single specimens. Work carried out by Dr. Milton Freeman. Weight samplings carried out in September. Harp seal, white whale, bearded seal and muskox samples collected at Grise Fiord, N.W.T. Body weight estimates low due to loss of blood at time of death. Weight of lungs of white whale increased due to death by drowning.

Appendix 11

SEMI-DURATION OF SUNLIGHT



DURATION OF CIVIL TWILIGHT



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